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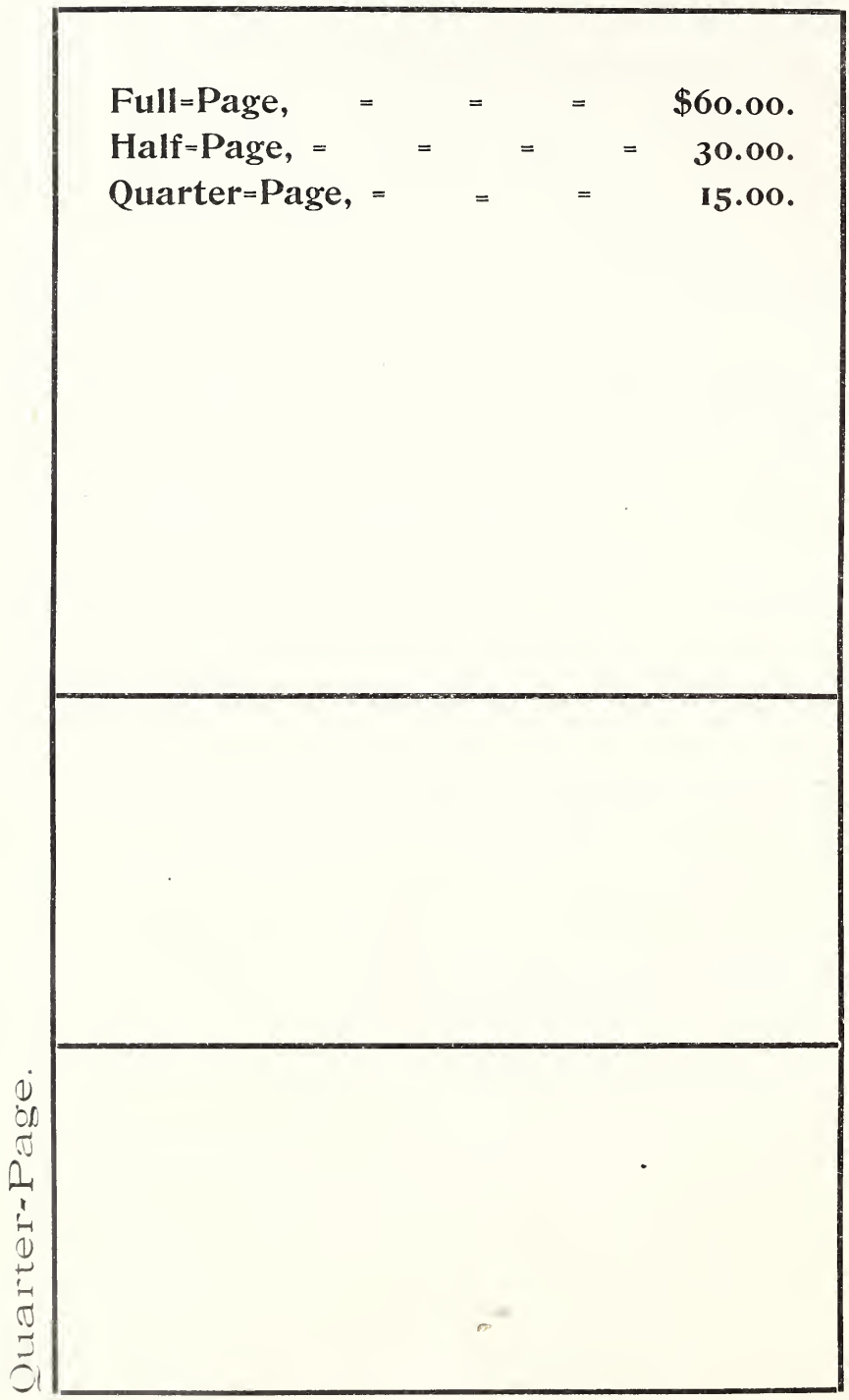
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THE PHOTOGRAPHIC TIMES.

VOL. XXII. JULY 1, 1892. No. 563.

THE STUDY OF A HEAD.

IT has so often been said that German professionals are far in advance of our own professional photographers in making portraits, that we are sure our readers will be glad to see a specimen of German portraiture. The present example is not only a fair illustration of portraiture by an eminent German photographer, but the photo-gravure reproduction was also made in Germany. We must admit that both the negative and the photo-gravure plates are exceedingly well made. There was a delicacy of development in the negative which made it possible for the photo-gravure to attain its steel-engraving effect, and there is a roundness in the lighting that certainly is entitled to all praise.

AMIDOL.

A NEW method of developing bromide of silver gelatine emulsion plates has been discovered by Herr J. Hauff and Dr. Bogish. The substance used is named *amidole* but properly speaking it is diamidophenol of the formula

$$C6.H_3\begin{cases}OH\\(NH_2)_2\end{cases}$$

The mere addition of sulphite of sodium to its solutions constitutes a developer of high energy; caustic alkalis or alkali carbonates are not only not at all necessary to make this developing agent more active, but are deliterious in fact.

Dr. Eder's reports on amidol in "Photographische Correspondenzen" is as follows:

Amidol is a white crystalline powder, easily soluble in water. The solution reacts acid, is free from color, but changes to a reddish hue by long standing, when its action is considerably weakened.

Caustic or carbonated alkalis convert the color to an intense blue-green, and borax to a reddish violet.

When neutral sulphite of sodium is added the solution remains colorless, it is then an excellent developer, and quite durable.

Pure aqueous solution of amidol acts with but little force upon bromide of silver gelatine plates. The following compound has proved to be highly energetic.

Amidol	5 grammes
Sodium sulphite	50 grammes
Water	1000 grammes

With this solution development proceeds far more rapid than with pyrogallol and soda, intensity builds up without delay and without loss of half-tones, and the sensitiveness of the plate is increased with this developer enormously, unsurpassable by any of the media heretofore known.

The remarkable and peculiar property of amidol to produce perfectly clear and intense negatives without the aid of any alkaline substances places it in front of all other analogous developing agents. With it we eliminate at once all those evils and annoyances heir to the use of alkaline developers.

Notwithstanding its acid reaction amidol is an active and rapid developer, or slower, according to the concentration of the solution. When prepared after the above formula it is a normal or average good developer. In that state it can be used repeatedly, till it assumes a yellowish color, when the action is slower.

The negatives are of pretty grayish-black color and are good printers, because of the clearness of the gelatine film being unimpaired, not even when fixed in a neutral hyposulphite of sodium solution.

Bromide of potassium solution 1 in 10 is recommended as a restrainer for amidol developer in the first place, though sulphuric or citric acid act just as well. Acid restrainers are, however, apt to produce feeble negatives, or refuse to build up intensity by long-continued action.

A stronger solution of neutral sodium sulphite accelerates. When the amount of this salt prescribed in the formula is doubled, the developer acts with increased energy, and produces perfect

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details in the shadow portions of the negative, when but shortly exposed.

Alkalis do not only give color to the developer, but they produce fog and monotonous negatives. Borax may act better, but to add it to the normal developer has no advantage whatever.

GLEANINGS FROM OLD BOOKS.

DRY COLLODION PROCESS.

Plain collodion	4 ounces
16-grain solution iodine potassium.	5 drachms
Pure wood alcohol	4 drachms
Camphor	4 grains
Etherial tincture of chloride of gold	3 drops
Tincture of iodine.	30 minims

This collodion was found to have improved after eight or ten weeks.

It is perfectly objectionable to use or to reject the chloride of gold in this formula.

The plates are excited in the usual silver-bath, on the withdrawal from which they are washed. They retain their sensitiveness and other qualities for more than three weeks.

The development is effected by first washing the plate in water, then pouring over the film the requisite quantity of the following developer:

Sat. solution of gallic acid	4 ounces
Distilled water	4 ounces
Acetic acid	1 drachm
Pyrogallic acid	4 grains

to which is added a few drops of a 30-grain solution of nitrate of silver.

Robert F. Barnes, 1854.

"It is worthy of remark," says the *British Journal of Photography*, who republished this process in 1867, "that by this process pictures were obtained which are said to be unsurpassed by those from any other dry process."

DRY ROSIN COLLODION PROCESS.

This process, published in 1855 by Mr. l'Abbé Despratz, is exceedingly simple and reliable. It consists in dissolving 2 grains of common rosin for every ounce of iodized collodion and to wash the film on the removal of the plate from the silver bath.

The exposure is about twice that required for ordinary wet collodion.

Before developing the plate is dipped in a weak solution of silver nitrate then treated by pyrogallic acid in the ordinary manner.

DRY COLLODIC-ALBUMEN PROCESS.

This is a simplification of the Taupenot process.

The collodion film is sensitized and washed, then flowed several times with a very diluted solution of albumen, then washed again, and finally allowed to dry spontaneously.

After exposure the plate is dipped in a silver solution strongly acidified with acetic acid and one proceed in the usual manner.

(*Madame Lebreton*, 1856).

The above negative processes are of course obsolete, having been replaced by others of a much greater sensitiveness. They may, however, be employed to take diapositives by contact.

COLLODION WET PROCESS.

COLLODION.

Plain collodion	30 fl. ounces
Iodide sodium	70 grains
Iodide zinc	5 grains
Iodide cadmium	90 grains
Bromide sodium	40 grains
Bromize zinc	45 grains

SILVER BATH.

45 grains to the ounce of water acidified with pure acetic acid.

DEVELOPER.

Water	16 ounces
Sulphate of iron and ammonia	1¼ ounce
No. 8 acetic acid	1 ounce
Alcohol	½ ounce

This process was devised for Mr. L. M. Rutherfurd to photograph the solar spectrum, and gave good results.

P. C. Duchochois, April, 1866.

COLLODION EMULSION.

A.

Ether	250 c.c.
Alcohol	75 c.c.
Zinc bromide	10 grammes
Pyroxiline	6 to 7 grammes
Nitric acid	2 drops

B.

Alcohol	175 c.c.
Silver nitrate, cryst.	14 grammes
Water	30 drops

Mix B to A by small quantities, shaking for a minute after each addition. Let ripe for twenty-four hours. This emulsion contains a slight excess of bromide. It keeps well. The best preservative is tannin—2 per cent.—into which solution the plate is immersed, after coating, until the liquid flows evenly on the film, when the plate is washed superficially and rapidly with a little dis-

tilled water.* Alkaline development. (*E. Duguesnoy*, 1868.)

This emulsion is not very rapid, but quite reliable. Good for diapositives. In this as in any other collodion process a substratum should be vsed to hold the film.

Canon Beechey's Emulsion. (1879.)

The old photographers will remember this celebrated emulsion process. It is simple, sure, and works in about twice the time necessary to impress a wet collodion film. After exposure the plate can be kept for about a week before development, after which the evalescence commences, and the film behaves as one under-exposed.

The Beechey's emulsion is prepared as follows:

Anhydrous cadmium bromide	400 grains
Alcohol, .805	10 ounces

Filter, then add

Hydrochloric acid, pure	80 minims
Of this bromized solution take	4 drachms

then add:

Ether, .720	9 drachms
Pyroxiline	10 to 12 grains

The collodion is sensitized by 40 grains of silver nitrate dissolved in one ounce of alcohol. This is done by pulverizing the silver nitrate and boiling it in a test tube with two drachms of alcohol, and decanting in the collodion. After well shaking, the operation is repeated until all the silver nitrate is dissolved and added. The quantity of alcohol is sufficient to effect the solution. However, 8 or 10 drops of water may be used to make the first solution.

This emulsion should be allowed to ripen for 24 hours, shaking occasionally in the meantime.

After coating the plate is immersed in water until greasiness has disappeared, then in a preservative consisting of 1 (one) grain of pyrogallol to the ounce of beer.

Alkaline development. In the dry collodion processes the developer should contain some bromide, else the film is liable to fog.

MIXTOL AND CRISTALLOS.

In the *Bulletin of the Société Cannaise de Photography*, Dr. Ch. Decaux gives the formula of a new compound developer which he names *Mixtol*. It is a mixture of hydroquinone, eikonogen and ferrocyanate of potassium; thus:

Boiling water	1000
Sulphite of soda	120
Hydroquinone	15
Eikonogen	10
Yellow prussiate	20
Carbonate of potash	75
Caustic potassa	15
Bromide of potassium	1
Glycerine	x

The chemicals should be dissolved in the above order. Glycerine, of which only a very small quantity—a few drops—should be added, has for its object of increasing the keeping quality of the mixture.

Dr. Decaux states that this developer is very energetic, that is does not produce yellow fog, does not blacken the finger and does not give rise to blisters as the developer known under the name of cristallos.

For use, one adds one-half a volume of water to develop instantanés and two-thirds of a volume for time-exposures, that is, 2 to 1 and 3 to 2 of water.

"As to the energy of this developer," says the Doctor, "here are the results obtained: with 70 c.c. of *mixtol* (a little over 2 ounces) diluted with the same quantity of water, we can develop 12 clichés 9 x 12 centim (about 4 x 5 inches). The first one is developed in from three and a half to four minutes, and the last one in from eight to ten minutes."

The *cristallos* is compounded as follows:

Hydroquinone	5½
Sodium sulphite	20
Potassium ferrocyanate	3
Sodium hydrate	12
Water	120

For use, dilute with three volumes of water.

It is a very energetic developer and does no more cause blisters than any other strongly alkaline developer in the same circumstances.

PARADOXES OF ART, SCIENCE AND PHOTOGRAPHY.

(*Continued from page* 332 *and concluded.*)

I feel serious promptings here to have a fling at science that will surely bring down the wrath of our President on my unfortunate head. I will try to ameliorate him by saying that science demands our greatest respect. No one can have more reverence for science than I have myself—when it keeps its place. But we are suffering from science, and fancy is dying out of the land. It is doing serious harm to photography as a picture-producing art. When a student ought to be studying the con-

*This is not a *sine qua non*. The preservative can be allowed to dry on the film, and as good results obtained.—*E. D.*

struction of a picture, and developing in his soul the art of lying, he is led away by the flickering *ignis fatuus* of science, and goes mad over developers. "Another new developer" has more effect on the tender feelings of the brethren of the camera than would the advent of a poet-photographer. This suggests a variation on Rejlander's "Two Ways of Life." One youth travels along the pleasant and virtuous walks of art, not listening to the Sirens of Fact; but dozens of others are decoyed to the worser way, and are soon lost in the seductive vanities and subtleties of science. They last long enough, perhaps, to modify a developer—with which science, however, tells them they can do little or nothing—and are heard of no more, except in the multitudinous platitudes used in the endless discussions of abstractions in society papers; and the scientific dream of the future is an Institute of Photography from which Art is to be excluded. Art will be very glad to part company.

Let us be generous and admit that Science has its good points, but it is doing a good deal of harm in the world. It is robbing us of our illusions. The science of History has defrauded Richard III. of his hump, made Henry VIII. a model character, and gone audaciously nigh to proving that Jack the Giant-killer never existed. We are bored by the tedious papers of those who "have not the wit to exaggerate nor genius to romance," and a synonym for dullness is a lecture at the Royal Society. But scientists are not without their hilarious moments. In our own art I cannot help thinking that scientists are trifling with a serious subject when they tell us that we cannot do as we like with our developers, or when they bring logarithms to bear on picture-making. But the humor is not all on one side, and we not unfrequently enjoy a smile at the prodigious engines they sometimes use to crack our poor little nuts.

What has science to do with art, except to provide materials for its use? It is only of late that art has, on the one hand, been made to depend on absolute scientific truth; and, on the other, by the same writers, been proved, in the case of photography, not to be an art because it cannot deviate from truth. It is merely an incident, an accident, a detail; call it what you will, that science, sometimes of the highest and most distracting kind, is connected with picture-making photography. The science that deals with the nature of the image, or the calculation of the curve of a lens, is a very distant cousin indeed to picture-making by the use of photographic materials. The use of materials invented by others for a definite purpose can scarcely be called science. No scientific theory should be allowed to have weight with an artist who has practised his art successfully for years, and knows what he wants and how to get it. If, for instance, I was told that it was proved by science that the negative would not yield all the tones of nature, I should reply that many years' practice had convinced me of that well-known fact, but the mere circumstance of it being proved scientifically did not alter the facts, or further limit the tones. When it was proved scientifically to Diogenes that he could not walk round his tub, that humorous philosopher settled the matter by walking round that desirable residence. I am afraid I have used this illustration somewhere before, but let it pass. In art, the artist sees his results, and it is for him to judge, from his knowledge of art and nature, *not science*, whether his results are true, or, at any rate, if they lie properly and are what he wants. The artist has to do with appearances, the scientist with facts. It is not enough to say this is not true. The question is, is it true enough for artistic purposes?

I have alluded to development once or twice. Two very clever scientists, whom I much respect, Dr. Hurter and Mr. Driffield, have proved to everybody's unsatisfaction that photographers have no control of the gradations; but this does not alter the fact that—to put the simplest case—he knows when a negative is over or under-exposed, or developed too dense or too thin to properly represent his idea of nature as far as in him lies, and his art will allow. Then there has been another great attempt made to show that the perspective of photography is not scientifically true. If the attempt was successful, which is very doubtful, *Who cares?* It has been true enough not be be found out for fifty years, and that is good enough for photography. Can it have been the want of truth that has unconsciously compelled artists since the beginning to admire the truth of photographic perspective, and rely on veracity? Here is another paradoxical nut to crack.

But my business is not to make a feature of the truth of any part of photography. On the contrary, I want to clear its character of the unartistic virtue of being nothing but a truthful, inevitable, stupid purveyor of prosaic fact.

Painters sometimes trust to us for truth; the Law Courts are becoming more wary, and appreciate our deviations. I was once found fault with by an artist for "altering" a photograph, on the plea that it would mislead a painter if he wanted to copy it. I found he *had* copied it before he saw the scene, and when he afterwards compared his picture with it, he found a clump of trees that

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should have appeared on the left transferred to the right. I had made the alteration by double printing, and improved the composition. *I did not* want a mere local view. I don't know that there is anything more exasperating than for a painter to take it for granted that it is a photographer's business to play jackal to his lion, and hunt up food for him; but it is a blessed truth that we *can* deceive him if we like. Painters ought to be more grateful to us than they are. Besides providing some of them with subjects, we have taught them what to avoid—educated them on the Spartan and Helot principle—and art has vastly improved during the half century of our existence. We have made the column and curtain background absurb. When our art was born, painters thought nothing of violating perspective by placing the horizon as low as the feet of their portraits, and made no difficulties about hanging heavy curtains from the sky, and we are still fulfilling our useful mission of showing artists the ridiculous things they ought not to do, but it is asking too much to provide subjects for them — idea, composition and detail. A painter should never use photography until he is capable of getting on without it, and then he should make his own photographs. To copy another man's work is not honest, and is a lazy and mischievous method of attempting to make a living.

I am afraid I have filled my space without giving as many specimens as I could wish of the possible delinquencies and untruthfulnesses that art requires and photography can accomplish; but I hope I have shown that, if it cannot lie like paint, it has the merit of approaching it in mendacity.

I will conclude with another illustration of the capabilities art for useful falsification. I once knew a photographer (it sounds better to put it that way) who was employed, for the purposes of a Parliamentary Committee, to make a series of photographs showing that one place was much more picturesque than another. Some ugly gas-works were to be erected and it was desirable to place them on the least beautiful of two spots. It may be also mentioned that it was likewise necessary that they should be placed on the site that best suited the promoters. Both places were very picturesque, but in the photographs it was easy to see the one site was a little rustic paradise (with suitable figures and fine skies), and the other a dreary desert, all foreground of the plainest! Yet both were true to fact, and they had the intended effect.

In conclusion let me express the pleasure I feel in being afforded the fascinating opportunity of saying a few humble words in praise of lying in a room which has been saturated with truth and fact for more than a hundred years—ever since, indeed, Barry "restored the antique spirit in art" by painting his anarchronisms on the walls, and from which building eminates the prospectus of the Chicago Exhibition, which honors our art with the crowning paradox of classing photography with instruments of precision.

H. P. Robinson.

ON THE CHEMICAL PROCESSES RESULTING FROM TONING AND FIXING CHLORIDE OF SILVER EMULSION PAPERS IN COMBINED BATHS.

[Abstract from an article in "Photographische Correspondenzen," by E. Valenta.]

The combined toning and fixing bath offers so many advantages or conveniences rather to the amateur photographer that it is not at all surprising the method has become so immensely popular, in consequence of which dealers in photographic supplies have prepared these solutions in a variety of formulas, and ready for immediate use. When we compare these formulas with each other, and with those published in photographic journals and books there is but little variation, for the substances they contain are mainly hyposulphite of sodium, sulphocyanate of ammonium or potassium, alum when it is purported to tone gelatine emulsion prints, and a small amount of lead salt when the toning of collodion is the objective point. The character of these solutions is generally the same, rarely showing a great difference in the quantities of chemicals employed, but it seems remarkable that among the many formulas having come to notice one prescribes an abnormally large amount of lead with pure hypo solution, and an other uses only gold with the fixing soda.

The tones of chloride of silver prints, when fixed in neutral or freshly-prepared hyposulphite of sodium solution are not very agreeable, they are of yellowish red, and only when a larger number of prints have been fixed in the same solution, they assume a more agreeable, a brown color. When the proofs are fixed in an old bath, or a fresh bath has been acidified slightly with either acetic or citric acid, the same effect is observed.

Blanquart Evrard has exhaustingly described the actions of partly decomposed hypo solution, and ascribes its peculiar behavior to the presence of a silver salt, but noticed the same effects when acetic acid is added to a freshly prepared hypo sulphite of sodium solution; the real cause of the toning action is in either case a tranformation of

the silver into sulphide of silver. Hypo solution by long standing or on the addition of a small quantity of a dilute acid is decomposed into sulphurous acid, and respectively sulphite of sodium and sulphur:

$H_2S_2O_3$ = H_2O + S + SO_2
Hyposulphurous Acid *produce* Water *and* Sulphur *and* Sulphurous Acid.

The decomposition proceeds, however, but very slowly, and after standing of several weeks small quantities of sulphurous acid may be still detected. When a piece of bright metallic silver is immersed in such acified hypo solution it turns black, owing to the formation of sulphide of silver.

Salts of acid reaction and alum have the same effects as dilute acids.

With alum the solution turns turbid, sulphur and oxide of aluminium being separated.

$3Na_2S_2O_3$ + $Al_2(SO_4)_3$ = Al_2O_3 +
Hyposulphite of Sodium *and* Sulphate of Aluminium *produce* Oxide of Aluminium *and*

S_3 + $3SO_2$ + $3Na_2SO_4$
Sulphur *and* Sulphurous Acid *and* Sulphite of Sodium.

A chloride of silver emulsion paper print turns in this solution to a disagreeable yellowish-red color, then brown, grayish-brown, and finally to a sickly slate color. But after a large number of prints have been fixed in the same solution the tone is of a more agreeable brown and uniform color, because of the hyposulphite having dissolved much chloride acetate or citrate of silver, inducing thus to the formation of hyposulphite of silver, or its double salt respectively.

$3Na_2S_2O_3$ + $2AgCl$ = $Ag_2S_2O_3(Na_2S_2O_3$ +
Hyposulphite of Sodium *and* Chloride of Silver *produce* Argentic Sodium Hyposulphite *and*

2NaCl
Sodium Chloride.

which promotes toning or rather the sulphurization of silver.

The experiments with alum and hypo were made as follows:

Hypo solution (20 per cent.).....115 cm.
Alum solution, sat..... ..... 10 cm.

The mixture turns turbid at once. When proofs are immersed in the filtered solution, they show at first the grayish-brown tone mentioned before, but after many prints have been acted upon they assume finally the usual photographic tone, because of the silver taken up by the hypo, and for that reason prescribe many formulas to add chloride of silver in the beginning. The bath acidified preferably with citric acid produces the same effects and decomposition of hypo into sulphite of sodium and sulphur, which in *statu nascendi* promotes the conversion of the silver image into sulphide of silver.

More advantages to the toning process is the addition of a lead salt.

Hypo solution (25 per cent.)..... 50 cm.

and nitrate of lead solution (10 per cent.) 50 cm. produces a clear and colorless solution, and fixes and tones rapidly, prints upon chloride of silver gelatine or collodion paper. After being dried, lead-toned pictures present tones equal to those produced by the gold, and superior to those of the combined alum and hypo bath, still does the tone depend here also upon a sulphurization of silver.

According to many investigations made the process may be explained as follows:

(1) The salts of lead (nitrate or acetate) in aqueous solution are at once decomposed when in contact with hyposulphite of sodium.

$Na_2S_2O_3$ + $Pb(NO_3)_2$ = PbS_2O_3 +
Hyposulphite of Sodium *and* Lead Nitrate *produce* Hyposulphite of Lead *and*

$2NaNo_3$
Sodium Nitrate.

(2) Silver is taken up by the solution from the emulsion film and argentic hyposulphite of sodium is formed.

(3) Plumbic hyposulphite of sodium decomposes very slowly, and separates sulphide of lead. Metallic silver when present is at once converted into sulphide of silver by its action

PbS_2O_3 + H_2O = PbS + H_2SO_4
Hyposulphite of Lead *and* Water *produce* Sulphide of Lead *and* Sulphuric Acid.

The sulphuric acid liberated reacts upon other hyposulphite of lead not yet decomposed and with sulphurous acid discharged at the same time induces to sulphurize the silver images.

$Pb.S_2O_3$ + H_2SO_4 = $PbSO_4$ + $H_2S_2O_3$.
Hyposulphite of lead *and* Sulphuric acid *produce* Sulphate of lead *and* Hyposulphurous acid.

$H_2S_2O_3$ = H_2O + S + SO_2.
Hyposulphurous acid *produces* Water *and* Sulphur *and* Sulphurous acid.

Aqueous solutions of lead nitrate in hyposulphite of sodium separate lead sulphide after long standing. When sulphocyanate of ammonium or potassium is added, these solutions remain clear and colorless; they are more durable than the simple lead-hypo bath and are excellent toners.

When chloride of gold solution is added to hyposulphite of sodium dissolved in water, sodium-

auro-thiosulphate, chloride and tetrathionate of sodium are formed.

$8Na_2S_2O_3$ + $AuCl_3$ = $3Na_2S_2O_3Au_2$
Hyposulphite of Sodium *and* Chloride of Gold *produce* Sodium-auro-thio-

S_2O_3 + $2Na_2S_4O_6$ + $6NaCl$.
sulphate *and* Sodium tetra-thionate *and* Sodium Chloride.

Sodium auro-thiosulphate is a tolerably permanent combination and not decomposed by weak acids (Fordes and Gilis). When in contact with finely divided silver, gold is separated and argentic hyposulphite of sodium formed. Commercial chloride of gold is invariably of strong acid reaction and conditions therefore a speedy decomposition of hyposulphite of sodium, followed by sulphurization of silver, and hence is the toning force increased.

The general action of toning and fixing baths composed of hyposulphite of sodium, sulphocyanates, lead salts, gold chloride, alum and citric acid may thus be summarized as follows:

1. Sodium hyposulphite and sulphocyanate of ammonium and potassium are excellent fixers. When chloride of gold alone is added to a solution of any of the sulpho-cyanates, the toning action does not proceed uniformly, and it is of frequent occurrence, light and shades on the same picture are of different colors. When hyposulphite of soda is present in requisite proportions, the evil is annihilated. Baths of such construction are durable and much preferred on account of their moderately rapid action.

2. Acids, especially so citric and acetic, decompose hyposulphite of sodium rapidly, and promote much the formation of sulphide of silver upon the picture film.

3. Alum and the salts of lead act similarly, their function as toning agents is founded upon their capability to convert the silver image speedily into sulphide of silver.

With gelatine emulsion papers alum is a necessary adjunct to harden the film.

4. The salts of lead and hyposulphite of sodium decompose each other mutually. Hyposulphite of lead, a product of decomposition, is soluble in an excess of hyposulphite, which in the sense of the above-mentioned decomposition equations becomes then a toner in its capacity to sulphurize the silver image.

The larger the amount of lead in the solution the more rapidly toning proceeds.

5. Salts of gold in the combined toning and fixing bath affect toning through the formation of aurous hyposulphite of sodium, a decomposition of the picture film, dissolving of silver and precipitating gold in its place. Is alum or a lead salt present, a silver sulphurization takes place alongside of the action of gold.

According to researches made the following combined toning and fixing bath may be said to be reliable enough for all practical purposes:

Water	500 cm.
Hyposulphite of sodium	200 gm.
Sulpho-cyanate ammonim	25
Nitrate of lead	10
Alum	20

Dissolve the hyposulphite first, add the sulphocyanate, the alum, and finally the lead nitrate previously dissolved in a small quantity of water. Heat to 50 deg. C., decant, filter, and add to each 100 cm. of it from 7 to 8 cm. of a 1 per cent. solution of ter-chloride of gold, and dilute with 100 cm of water.

The bath is quite durable, and works well. Collodion prints need no washing previous to toning, but those on gelatine bases should be rinsed off first with two or three changes of water.

PHOTOXYLOGRAPHY.

Professor Alex. Lainer describes in *Photographische Correspondenzen*, a new and useful method of printing photographs upon wood, preparatory for the engraver's work. Instead of first making the block impervious to water by means of paraffine or shellac solution, instead of whitening it, and of salting and sensitizing the surface to be printed upon, he condenses all these operations into one with perfect success, by making a sort of emulsion of the various substances employed, and by applying it at once to the block.

For the most perfect execution of the method he prepares four stock solutions:

I.

Gelatine	1 gm.
Water	30—50 cm.

II.

Chloride of ammonium	10 gm.
Water	100 cm.

III.

Silver nitrate	10 gm.
Water	50 cm.

IV.

Citric acid	30 gm.
Water	60 cm.

Mix these four solutions with pestle and mortar in this order: I. 5 cm.; II. 1 cm.; and add of

perfect zinc white 5 gm., rub up finely and add of III. 8 cm., in small portions at the time, and by constant stirring, and finally of IV. 3 cm.

When all is thoroughly mixed add 1 cm. of boiling water, and, with a soft badger-brush, distribute the compound upon the block. Do it in parallel strokes, first in one direction, and when the emulsion is sufficiently set in the opposite end, equalize the coating with a broad and soft brush.

The emulsion dries quickly. Printing is done from a reverse negative or from the reverse side of a film negative. A negative of average intensity requires printing in direct sun from 5 to 10 and in diffused light from 15 to 60 minutes.

The printed block is slightly washed in pure water and fixed in concentrated hyposulphite of soda solution or the combined fixing and toning bath; after washing the block is submitted to the action of chrome alum, washed again and dried.

Intensifying, if necessary, may be done with bichloride of mercury and ammonia, which renders the neutral tone of the picture to a reddish brown.

A dilute solution of gutta percha or caoutchouc in benzine affords protection to the very delicate silver deposit.

The character of the picture depends much upon that of the negative and the length of exposure.

Correspondence.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: Experimenting with exceedingly dense negatives that would take at least a day to print one proof, I found that to half bleach the cliché with mercuric chloride, ½ ounce mercuric chloride, 8 ounces water; then wash well and dry the resulting print after one hour exposure in the shade was soft and full of half shades very satisfactory as compared with results before thus reducing it. If any of the amateur friends find this process an improvement on extra dense negatives it may meet a case that will suit some of the unskilled amateur experiences.

Respectfully,

J. R. Smith.

HOWARD, R. I., June 20, 1892.

PHOTOGRAPHY AT THE WORLD'S FAIR.

To the Editor of THE PHOTOGRAPHIC TIMES:

Dear Sir: On behalf of the thousands of amateur photographers who will desire to make photographs on their own account at the World's Fair, and of the hundreds of photo supply houses and plate manufacturers who will profit thereby, I have undertaken to circulate a petition urgently requesting that the general right to exercise the photographic privilege at the Fair be recognized. The privilege has as yet not been accorded to any particular person or persons, so I am informed, but the advanced opinion as expressed by the ways and means committee has been adverse to the wishes of the amateurs, mainly on the grounds set forth in the petition. It is desired to present to this committee, before final action is taken, the united opinion of the photographers of this and foreign countries in favor of an extension of the photographic privilege.

Every amateur, or any of his friends interested in the subject, is invited to sign the petition. Copies will be sent to all the photographic supply houses for signature.

Nine-tenths of the photographic societies in the United States have cordially endorsed the petition, and it is hoped the hosts of amateurs who owe no allegiance to any organized body will give this movement their free and hearty support.

Believing that THE PHOTOGRAPHIC TIMES will be glad to aid this undertaking, I appeal to its many readers for united support.

Yours fraternally,

F. C. Beach.

New York, June 24, 1892.

QUICK SHUTTERS.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: I wish to ask our friend Mr. Stillman if he ever used a "*rapid*" shutter? I have not the slightest doubt but what Mr. Stillman has been blessed with sufficient inventive genius to enable him to adapt (or make) a shutter unquestionably speedy enough to catch running water, but I trust he don't think for one moment that this is a test of rapidity.

Last year during Convention week I went to Niagara and photographed the Falls with the slowest speed of my "Prosch" shutter, on a Carbutt ortho plate, and got beautiful results, but when you catch a ball (pitched by the Cyclone "Rusie") in the air before it reaches the batter, or a race-horse taking the stone fence, an athlete sailing in the air during a broad jump, or some such rapid moving subject at about 30 feet distant, then you are doing something to talk about.

Now let me tell you that there is only one shutter on the market that will do this class of work satisfactorily, and this is the above mentioned shutter, and were I the happy inventor and owner of this unrivalled piece of photographic mechanism, I should be only too pleased to enter a contest and prove to the erring ones, and others who are being led astray, the fallacy of such impressions that have got abroad through the misguidance of those who are not at all capable of using a "quick" shutter, much less writing about it.

I do not claim to know anything about the construction of a "quick" shutter, but I do know this much, I have a mighty "quick" one, and sometimes think I know how to work it, then again, when I get in the dark-room, it takes me some time before I can find out if I have worked it.

In conclusion Mr. Stillman remarks that his pet shutter is a wonder, and nothing has been seen in this part of the world like it. Probably this is so, but any one who wants to see its superior can call and be convinced by

Yours truly,

J. C. Hemment,

Staff Photographer, Frank Leslie's Weekly,

110 Fifth Avenue, N. Y., June 25, 1892.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: Mr. W. J. Stillman does not seem to have profited much by the great many experiments in rapid shutters he has made, and the practice had with lenses for his article shows a decided lack of knowledge of the subject.

I shall be surprised if some champion of the *focal-plane* shutter does not take him to task for ascribing to the guillotine shutter, the qualities generally credited to the former. My criticisms are directed to the title of his article and the second paragraph.

It is a puzzler even to surmise why he chose the title "Quick Shutters" when the larger part of the article is devoted to laudatory description of the slowest of the prominently known shutters, its speed not exceeding one one-hundredth of a second. Presumably, however, he considers that speed all that can can be *utilized*, for he says that "is all that the rapid type of symmetricals (lenses) commonly used for landscape work will stand."

His statement of what the theoretical shutter should be is much clouded, because incomplete. Only by inference, and that after the whole paragraph through can it be understood that he means a shutter working at the diaphragm.

He lets a big cat out when he says, speaking of the "Iris" diaphragming action of the shutter he is writing about, "It begins with an infinitesmal opening and ends with the same, so that the opening is really only the means of the whole exposure, *i.e.*, that of half the diameter of opening of the lens for the whole time employed, which is less than half the area of the full opening." So that, according to his admission when working with an "Iris" diaphragming shutter, and it adjusted to, say *f*/16, it is really working with the effect of at least *f*/32, giving the definition secured by the use of such a small diaphragm, *and requiring the time necessary for it*—four times that required for diaphragm *f*/16. No wonder that when working with a lens adapted to such a shutter "its (the lens) definition is better than it could be if the full opening were employed," using his slit shutter.

Yours truly,

A Handler of Many Shutters.

NEW YORK CITY, June 27, 1892.

Notes and News.

C. R. B. Claflin, of Worcester, has sold out to J. S. Marion.

W. P. Kennedy, the well-known photographer of Green Castle, Pa., is dead.

L. K. Merrell, of Ionia, Mich., has sold his photographic gallery.

The members of the Capitol Camera Club, of Washington, D. C., enjoyed an outing on the canal, to Cabin John Bridge and Glen Echo, on Wednesday, 22d of June.

J. Wells Champney, the artist and amateur photographer, sailed for Hamburg, Germany, on the "Columbia," Thursday, June 23d, to be absent throughout the summer, studying pastels in the European gallery.

The Third Annual Convention of the Photographers' Association of Iowa will be held at Des Moines, August 2d, 3d, and 4th.

The membership fee has been reduced to $1. The annual dues are $1. All communications should be addressed to J. Verran, Secretary, 411 Court Ave., Des Moines, Iowa.

NOTES ON STAR PHOTOGRAPHY.

THE writer would beg the indulgence of those astronomers who may be induced by the title to read these lines in the expectation that they are the results of practical work in photographing stars. These, unfortunately, he cannot give; but inasmuch as the astronomers have so liberally availed themselves of the simplified methods of modern photography, which they can carry out more or less satisfactorily themselves, it is only fair that photographers should have a word to say now and then in behalf of the branch of investigation which they represent. By the term *photographers* I do not mean mere operators in the dark-room, nor amateurs who can make fine pictures, nor anything of the sort. I mean what may be best designated as photographic chemists, who are practically familiar with the subject from a chemical and scientific standpoint, and capable of conducting researches and designing and using apparatus for that purpose. It is certainly true that astronomers generally have neglected the surest means of achieving the highest success and advancement in their photographic work, in that they have undertaken to carry out themselves that part of it which ought to engage the attention of the highest skill and knowledge of the photographic chemist. So little is this fact recognized, that we actually sent a party to photograph the last eclipse of the sun in Japan, absolutely without either a photographer or a photographic outfit. So far from any effort to utilize the latest knowledge and methods for eclipse work, that expedition might easily have proved a total failure from the absence of the essentials for common work. When the expedition to the coast of Africa was fitted out, great attention was given to designing certain forms of apparatus; but, if I recollect aright, no photographer was chosen until a few days before its departure. Then a certain commercial brand of color-sensitive plates was chosen, but on what grounds, or whether the spectrum sensitiveness of those plates was tested at all, I have never learned. There will be an excellent opportunity for eclipse work next year; but if anything new is to be learned from it, the work of preparation should begin now in a photographic laboratory. We have apparatus enough, or we know perfectly well what is required, but we do not know the photographic process best adapted to the work.

It may be but an idle dream, but I hope to see a photographic laboratory established in connection with one of our large observatories or universities, not for routine work but for purely scientific research in photographic chemistry, such as will enable us to apply the latest knowledge to astronomical and spectrographic work.

An announcement has recently appeared, to the effect that the French astronomers have begun to doubt the value of negative of stellar bodies taken on orthochromatic plates, because the stellar discs are surrounded by a strong aureola due to the aberration of the red rays of the objective. For this reason the permanent committee on the

chart of the heavens has decided to exclude orthochromatic plates for such work.

I presume every one finds some satisfaction in saying, "I told you so." The announcement leads me to publish now an article on this subject which was written in Japan between four and five years ago. It was perfectly clear to me at that time, that color-sensitive plates were being used in astronomical work when the very opposite kind of plates would have been much better for the purpose. Instead of extending the sensitiveness, it should have been restricted as much as possible. My article was not published because I deemed the facts too obvious to require discussion. But since M. Léon Vidal, editor of *La Moniteur de la Photographie*, has taken, as I believe, an erroneous view of the matter in opposition to the practical results of the astronomers, I have looked up my old MS., and publish it herewith without change.

I would add that the opinion then expressed as regards the future of collodion plates, for all scientific work, has been greatly strengthened by the results of later investigations.

The article referred to is as follows:

The so-called isochromatic, or orthochromatic sensitive plates have been recommended for use in astronomical photography, in order to obtain impressions of red or yellow stars along with those having more blue and violet light in their radiations. Spectroscopic observations have shown that the light of different stars differs very much in the proportion of highly refrangible rays, and this difference must be of great influence in determining their photographic action. The ordinary sensitive gelatine glates possess a maximum of sensitiveness near the Fraunhofer line H, but some action can be traced into the yellow as the result of very long exposure, or even still further. For ordinary exposures, however, we may consider that the action does not pass the blue, particularly when photographing bright sources of light, such as the stars, because the more refrangible rays are so very much more powerful in their effect upon the plate that they exert their full action before the others can make a visible impression. To extend the time beyond that point would result in a reversal of the effect sought for, a change in the character of the negative, and serious irradiation or spreading of the light around the image, resulting in impaired definition. With ordinary sensitive plates, therefore, the images we photograph are images made with blue, violet, and ultra-violate rays, covering, indeed, a considerable range in the spectrum, but excluding a large and important portion of it.

The differences in the character of star radiations are so considerable that the blue is sometimes very strong and brilliant, even exceeding that of the sun relatively to the other parts of the spectrum, as we find it in α Lyræ and in Sirius; while in other stars the temperature is so low that there is scarcely any blue, and line-absorption gives place to flutings, or even the bright lines of incandescence from comets and nebulæ. It is obvious, therefore, that one star not only differs from another in glory as seen by the eye, but the photographic plate, which takes no account of any colors beyond its limited range of sensitiveness, tends to exaggerate the difference, and give utterly false evidence of relative brightness. For a red star may appear very bright to the eye, while its image on the plate would be very faint or perhaps scarcely discernable.

With orthochromatic plates the result will be different, provided the telescope itself is not at fault. We will assume for the moment that the telescope is so constructed that the "chemical" and visual foci exactly coincide, and that the plates are equally sensitive to all the colors of the spectrum. Then the negative will show exactly what is seen by the eye, and these are the only conditions under which such a result can be perfectly attained.

Doubtless such perfectly corrected telescopes, or perhaps I should say such as are so corrected within the limits of the optician's skill, are rarely available, and a very usual plan is to make certain corrections for ordinary telescopes to adapt them to photographic work. The effect of these corrections now deserves consideration.

(*To be continued.*)

Photographic Societies.

NEW ENGLAND LANTERN-SLIDE EXCHANGE.

THE meeting of delegates of the New England Lantern-Slide Exchange was held on board the Steamer Thomas A. Morgan, Friday, June 17th, at 2.30 o'clock. R. C. Fuller, of the Providence Camera Club, called the meeting to order, and Mr. Will C. Eddy, of Mystic Club, was elected Chairman. The following clubs were represented:

Mystic Camera Club, Will C. Eddy; Lynn Camera Club, W. H. Drew; Portland Camera Club, R. C. Fuller, proxy; Springfield Camera Club, Hinsdale Smith, Jr.; Waterbury Photographic Society, R. C. Fuller, proxy; New Britain Camera Club, Fred'k Wessel; The Camera Club of Hartford, O. H. Ham; Providence Camera Club, R. C. Fuller; Boston Camera Club, W. H. Drew. Applications for membership in the Exchange were received from the Pawtucket Camera Club, and the Mattapan Camera Club, and both were elected, F. M. Barber representing Pawtucket, and E. Sonnenbrodt representing Mattapan.

The motion was made that the first rule of the Exchange limiting the membership to 12 be amended to read 15, and it was so voted.

Applications of the New Haven and the Lowell Camera Clubs were received, and they were elected, Mr. G. F. Newcomb representing New Haven, and Mr. G. A. Nelson, Lowell.

The report of the Secretary was next presented and read by Mr. Fuller, showing that although the date of starting the Exchange the past year was later than it should have been, all the Clubs had responded well, and kept up to the schedule time in the circulation. Mystic was the only Club that had full reading matter accompanying their slides, "Paul Revere's Ride" being the subject of the lecture, which was well received and favorably reported upon by all the Societies that have seen it. It is to be regretted that there was not more attention given the Rule, calling for interesting reading matter in connection with the Sets. Then followed a list of the five best pictures, selected by each Club. These lists will be very interesting to the separate Clubs, as showing the fair judgment of the Exchange upon their work.

No Club knew of the selections of any other Club, and the relative number of pictures chosen in the 50, shows the care exercised by the respective Club Committees in making up their slides. The largest number (22 out of

50) indicates a pretty good collection of slides and the diversity of opinions upon the merits of the various classes of subjects exhibited in the last year will tend to awaken us all to renewed interest in the most attractive branch of photographic work.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the society was held on Wednesday evening, June 8, 1892, Mr. Joseph H. Burroughs, president, in the chair.

The Board of Directors reported that at the conversational meeting, May 25th, the prize lantern-slides sent to the American Interchange by the English journal, *Photography*, were shown.

Mr. Harrison D. Stratton was elected an active member at the board meeting, June 2d.

The family of the late Mr. William L. Springs have presented to the society a collection of lantern-slides made by Mr. Springs.

A communication from Mr. F. C. Beach, editor of the *American Amateur Photographer*, was read, in regard to a petition for the extension of the photographic privilege at the World's Fair in Chicago in 1893.

On motion of Mr. Taylor, the president was authorized to sign the petition representing the two hundred active and life members of the society.

Mr. G. B. Wood exhibited a small camera which a friend of his had brought from Paris. It was of the size and shape of an opera or field glass, and carried 12 plates, size 2⅜ x 1¾. The lens was of a universal focus, and was contained in one side of the camera. The other side was used as a finder, the exposure being made by an exposing shutter on the lens.

Mr. G. B. Wood also exhibited a very ingenious dark-lantern for use when traveling. It contained a reservoir for stearine, so arranged that when the lamp was lighted the heat melted the stearine, which then ran down to the wick. The lantern was small and compact, and could be readily packed for travelling.

Mr. Jennings exhibited a series of lantern and stereoscopic slides of lightning flashes. The stereoscopic pictures, he claimed, were the first ever made of the heaven's electrical discharges, and the stereoscopic effect was decidedly interesting. In one case the sensitive plate had caught the mystical thunderbolt, from which radiated, in various directions, numerous tongues of flame. The theory of the exhibitor was that thunderbolts were formed by a collision of flashes and a consequent scattering of the discharge into a number of points or balls of flame, which travelled onward into space on their own account.

In another view the stereoscope revealed the fact that a discharge apparently zig-zag in its direction was really spiral in its course.

Mr. Browne submitted two negatives for inspection, one of which, a flash-light picture, was disfigured by a wavy ribbon of light across the centre. The other was dotted with small circular spots of white glass. The latter he believed to be due to the use of a rose nozzle in washing—a wearing away by the continued action of water, but the former he was utterly at a loss to account for.

Mr. Wood stated that he noticed the other day, on examining certain negatives taken seven or eight years ago, that the film was leaving the plate—coming off in great flakes. The plates were not frilled when developed, and he thought perhaps the alum bath rendered the film brittle, and gave it a tendency to leave the plate.

Mr. G. M. Taylor said he knew of an instance where the film had left the celluloid altogether—had peeled off in one piece.

Mr. Young exhibited negatives made by the new Zeiss Anastigmat lens, manufactured by the Bausch & Lomb Co. The lens was 4 x 5, but Mr. Young tried it on a 6½ x 8½ plate, with full opening, and it covered the plate well to the margin. The definition, depth of focus and rapidity were remarkable.

Mr. Pancoast showed a panoramic photograph of the city of Waterbury, Conn., which he had taken by means of an adjustable tripod top of his own manufacture. Four 8 x 10 plates were used, and the pivotal top he had carefully subdivided into four positions, embracing in all 101 degrees. He had a supplementary arrangement with five positions, which would take in 124 degrees. The picture exhibited showed great uniformity, and the continuity was admirable.

At the conclusion of the meeting a series of slides, presented to the society by the family of the late Mr. Springs, formerly a member of the Society, were shown upon the screen, together with others contributed by members present for the evening's entertainment.

Adjourned.

Robert S. Redfield,
Secretary.

EXCURSION OF THE NEW ENGLAND CAMERA CLUBS.

FRIDAY, JUNE 17, 1892.

THE Providence Camera Club, acting as Secretary of the New England Lantern Slide Exchange, called a meeting of delegates for Friday, June 17th, and in connection with this meeting proposed an Outing on Narragansett Bay. Thus it was that on Friday, in the bright warm morning, the active members of the Providence Club were seen flying about from club-room to the depots, hotel and steamboat wharf, mustering their forces. Hartford, Springfield and New Britain had their delegates in the city the evening before. The 9.30 train from Boston brought 77 people, most every one of whom was supplied with the most approved cameras. Altogether there were 125 passengers aboard the "Thomas A. Morgan" when it left the wharf at 9.50 for Rocky Point. There was an abundance of room on the spacious boat for each to set up his outfit and leave it standing in readiness for passing vessels, or any other object to the operator's fancy. There were thirteen different camera clubs represented in the gathering, and the exchange of opinions upon cameras and lenses, plates and developers, would have done credit to any Photographers' Association meeting, and certainly convinced them that the amateurs are not all of the "press the button" class.

Among the excursionists there was about $4,000 of cameras and lenses distributed, besides the abundance of plates and films.

The sail down the Bay to Rocky Point was very refreshing, and upon the arrival at the wharf the party spread itself over the grounds to take pictures after being warned

that a Rhode Island clambake would be "ready to *be taken*" at 12.30 o'clock. Promptly on time the doors were opened and all passed into the cool dining pavilion near the water, and for an hour were strictly engaged in discussing the probable time that clams would hold out on these shores, and what was going to take their place, etc.

After dinner the party repaired to the shady hillside where some of the enthusiasts assumed the task of arranging a group. The party was like good-natured children moving one way or another to meet the plan of this or that artist, while some of the "artists" were *perfectly satisfied* to "shoot" them just as they would do if they *were* taking a "group of children." Which is the most natural only the prints will show. Exactly at 2.30 the steamer started on the return trip. This included a sail over to Bristol Ferry up Mt. Hope Bay, and while in the city the mercury stood well up to 100 deg. in the shade, here the breezes were so fresh and strong a number of overcoats and wraps were gotten out. One of *the "shots"* for the day was a large three-masted schooner under full sail bearing down upon the steamer as we were returning from Mt. Hope. It was a beautiful sight and one that was recorded upon many a plate and no doubt will make its appearance in some of the slides the coming season of lantern-slide work. Up the river each lighthouse and passing craft furnishing subjects for those who had any plates left, by the Pomham and Squantum Clubhouses, whose location in the afternoon sunlight was cause for regret to those who had used their last plate, up among the steamers and vessels, finally to make our dock precisely on time. It was well that we did, for when the excursionists had barely reached the station, the dark and threatening clouds which had been rapidly coming up broke, completely deluging the hot and dusty city with a most refreshing shower. By six o'clock all the visitors had departed after many expressions of satisfaction for the pleasant day they had enjoyed on Narragansett Bay.

The Editorial Table.

We have received from Mr. W. A. Babcock, of Utica, a very interesting 6½ x 8½ photograph entitled "A Political Discussion." Two old specimens of the genus Yankee sitting on a fence, the one whitling a stick, the other smoking a short clay pipe and apparently engaged in animated discussion on the Presidential contest. The picture is so realistic, so thoroughly American, and the photograph of high artistic and technical merits, that it deserves the highest praise.

We have received from Messrs. Bradfisch & Pierce some more specimens of portraiture on their superior aristo paper.

They are for the most part from celebrated negatives by Saroney, and are all any photographer could desire, in their faultless technical qualities.

"**The regular** appearance of THE PHOTOGRAPHIC TIMES is certainly appreciated," writes Chas. Barnard, author of the "County Fair."

Queries and Answers.

287 WHAT is the effect of magnesium sulphate or Epsom salt upon bromide of silver or chloride of silver emulsions, and how is the salt to be added to the emulsions?

287 *Answer.*—Sulphate of magnesium has the property to harden gelatine, boiled starch, albumen and other proteen matter, for which reason it has been successfully employed as an anti-frill in the developing of gelatine emulsion plates; we find it in French drazées solidifying sugar coatings, and the Chinese laundrymen use it extensively in clear starching. In developing gelatine plates a teaspoonful of a concentrated solution of the salt in 2 ounces of the liquid has sufficient energy, and as the salt is soluble nearly in its own weight of water, and its solidifying force quite pronounced, we should think 15 grains of it added to 8 ounces of emulsion would be quite effective. To bromide of silver emulsion for negative purposes the salt should be added after washing, and to chloride emulsion for printing-out purposes after emulsification has been completed. It appears to be important in either case, that the emulsion be neutral, as ammonia or any of the alkaline salts will decompose the magnesium sulphate.

288 PRINTER.—How strongly should plain Saxe or Rives paper be salted, preparatory to matt-surfact printing, the sensitizing solution of nitrate of silver being of 1 in 10?

288 *Answer.*—300 grains of ammonium chloride in one gallon of water. Immerse the paper in the solution for from two to three minutes.

289 HARRY G. M.—His first attempts to make bromide of silver gelatine emulsion has resulted in total failure. Instead of being kept suspended in the gelatine solution the bromide of silver sinks rapidly to the bottom of the jar, leaving the supernatant liquid almost clear and free from silver bromide. What is wrong?

289 *Answer.*—The silver solution has been added in too large portions at a time, and without shaking up the solution sufficiently well after each addition, or the gelatine has not been sufficiently *hard*, or there was not enough of it. With iodo-bromide emulsion, separation of the silver haloids is more liable to occur than with pure bromide.

290 M. VAL. K. has an old and unvarnished autotype. It is well put up and sealed with gum paper, but around the brass matt is a dark blue deposit fringed with yellow, growing larger apparently in course of time. How can this growth be arrested, and the colored deposit be removed eventually?

290 *Answer.*—In the same manner as it is done with stained daguerreotype plates. Take off matt and cover glass, soak the picture in water for a few minutes and wash with a dilute solution of cyanide of potassium, when the stain will gradually disappear. Finally, wash in pure water and dry.

Very strong cyanide of potassium solution may dissolve the picture entirely.

291 MAUD APPEL.—How can I mount mounted photographs upon other and larger-sized cardboards?

291 *Answer.*—Run the mounted picture through the burnisher, without binding it. When perfectly flat paste with ordinary white glue, attach to the larger mount, and dry under pressure.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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Weekly (illustrated) for one year $5 00
" " " six months 2 50
" " three month's trial 50

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Subscriptions to THE PHOTOGRAPHIC TIMES received by all dealers in photographic materials in this and foreign countries, also by the American News Co. and all its branches.

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Size of advertising pages, 6½x9¼ inches; outside size, 8½x11¾ inches.

One page, each insertion $25 00
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Business Notices, not displayed, per line 25

Discount for term contracts.

Copy for advertisements must be received at office one week in advance of the day of publication. Advertisers receive a copy of the journal free, to certify the correctness of the insertion.
All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

Bradfisch & Pierce are making extensive additions to their plant, and an entire re-arrangement by which they will be enabled to manufacture their superior aristotype paper in quantities to meet all demands, and in uniform quality, whether the weather be hot or cold.

Testimonials are continuing to pour in from all sides to the effect that this paper is indeed "Perfected."

SOME EXCEPTIONAL BARGAINS.

The Scovill & Adams Company are offering the following goods at exceptional bargains for a limited time:

		List.
4 x 5	Favorite Outfits	$10 00
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6½ x 8½	N. P. U. "	14 00
4 x 5	Antique Oak Cameras	15 00
No. 2	Knack Cameras	17 50
No. 1	Mascot "	25 00
No. 2	" "	27 00
Index Cameras		15 00

Sometimes a subscriber loses interest in photography and gives up the magazine, but where one such ceases to take THE PHOTOGRAPHIC TIMES there are always two new subscribers to take the place of the old one. The following is a recent example of this fact:

A Miss Harriet M. writes from Salem:

"*Since writing that I did not care to take* THE PHOTOGRAPHIC TIMES *any longer* TWO *of my friends have become so much pleased with it, that I have promised to renew my subscription for them.*"

"**Thanking you** for your promptness in getting out the camera box, and paying you *the very highest compliments* for the workmanship displayed in its manufacture, I am, yours truly, WM. C. DANIELS," the well-known amateur photographer in regard to a camera recently purchased of The Scovill & Adams Co.

A Significant Fact.—"I saw a photographer less than a week ago who said he never saw anything about my photo-engraving in any journal, and this after I had run an advertisement for three or four months in six to ten journals and magazines directly connected with photography," writes a well-known photo-engraver of the West as a comment on the value of *some* photographic periodicals as advertising mediums.

It is needless to say that THE PHOTOGRAPHIC TIMES was not one of the "six to ten periodicals directly connected with photography" in which this advertisement appeared for three or four months. If it had been the photographer would have known all about his photo-engraving!

The best and most desirable enameler is the Acme. Send to the Scovill & Adams Co., trade agents, for price list.

If the demand for other styles of Aristotype paper has been equal to the demand for the Bradfisch & Pierce brand during the last month, there must be a very large amount of it used.

Bradfisch & Pierce have assured their trade agents (The Scovill & Adams Co.) that within ten days their facilities will be such as to supply not only any ordinary demand, but an extraordinary one, and if necessary their facilities will be still further increased.

The Royal British World's Fair Commission has appointed a Photographic Committee, consisting of Captain Abney, Francis Cobb, James Dredge, G. Davison, Colonel J. Gale, H. P. Robinson, and Sir Henry Truemen Wood, to form a collection of photographs, representative of the best work which is now being done in England, both by amateurs and professionals, for the Photographic Department of the forthcoming Exposition. The pictures lent for this purpose will be transmitted to Chicago and taken back free of charge to the exhibitors, and the Royal Commission will also undertake their care while they are in the Exposition. The committee proposes to send an invitation to a limited number of photographic artists, and hopes to be able to get together a collection which will be worthy of the present advanced condition of photographic art in England. Pictures will only be received from those to whom invitations have been addressed. In addition to the selected collection there will be many photographs sent by exhibitors at their own cost, and for these space will be allotted in the usual way.

Business Notices.

FOR SALE.—A new Dallmeyer 4 x 5 Rapid Rectilinear Lens, $25. List price $37. Address W. F. RANDALL, 288½ Stuyvesant Ave., Brooklyn.

FOR SALE.—For $700, a paying gallery, established over thirty years; thoroughly equipped. This is an excellent opening for a practical man; cheap rent. I get $3 for cabinets; good reasons for selling. Address
EMILE E. BUCHER,
3518 Market St., Philadelphia.

FOR SALE.—A new 4¼ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
Care THE PHOTOGRAPHIC TIMES Office.

RAPID RECTILINEAR LENSES AT COST.—4 x 5, $5; 5x7, $12; 5x8, $7; 6½x8½, $8; 8x10, $12; 10x12, $18; 11x14, $24. Write for price list.
W. P. BUCHANAN, Importer, Philadelphia.

BACK NUMBERS OF SUN AND SHADE, including Nos. 3, 10, 11 and later issues, in perfect condition, 25 cents each. Regular price is 40 cents, and the earlier numbers are at a premium. THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION.

WANTED.—Partner (a Hustler) on Photo Supply business. Must have some capital. For particulars address
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Successor to Crump Bros.,
363 W. Jeff St., Louisville, Ky.

FOR SALE.—An Albion Outfit, 8½ x 6½, with Roll-Holder and Lenses; a 5 x 7 Outfit; a Beck Hand Camera Stereo-Camera, and several Lenses. Send for list to
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THE FINEST Platinotype Solar Enlargements and contact prints, in black and sepia, are made by
THE PLATINOTYPE CO.,
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Send for price lists.

FLASH-LIGHTS AND HOW TO TAKE THEM! A complete treatise on Flash-Light work. Fully illustrated by Louis Clarence Bennett. Price, 50 cents, Order a copy now from THE SCOVILL & ADAMS CO.

FOR SALE AT A BARGAIN—A 5 x 7 Henry Clay Camera, with a 6½ x 8½ Dallmeyer Lens, Prosch Shutter, five extra holders, and a folding tripod; all in excellent condition; as good as new; regular price, $120; will sell for $90 cash. W. V. CLARK,
Hackensack, N. J.

FOR SALE.—A Beatty Parlor Cabinet Organ, catalogued at $300, which I recently drew as a prize. This Organ is in perfect condition; but, as I have no use for it, I will sell it for $100 cash. Address E. R. C.,
care PHOTOGRAPHIC TIMES Office.

FOR SALE.—I will sell my Safety Bicycle, which cost over $100, for $50 cash. It is in excellent condition. Address W. B., care PHOTOGRAPHIC TIMES Office.

LANGILL. 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

WANTED.—No. 416, September 6, 1889, issue of THE PHOTOGRAPHIC TIMES. Will pay fifty cents for this copy if in good condition.
A. L. PHILLIPS, Jamestown, N. Y.

LANTERN-SLIDES AND HOW TO MAKE THEM, by A. R. DRESSER.—A new book, very complete and thoroughly practical. Only 25 cents. Sent postpaid on receipt of price by THE SCOVILL & ADAMS CO.

THE finest-fitted Dark-Rooms in the United States are open for the accommodation of Amateurs, at 122 W. 36th Street. DARLING, Photographer.

FOR SALE.—Gallery well fitted up; good location in town; must sell quick; all complete, $350; a mine for some one; rent only $16, worth $30 per month.
F. C. BLATTER, 124 W. 12th St., Chicago,

"THE PHOTOGRAPHERS' BOOK OF PRACTICAL FORMULÆ."—In order to make way for the SECOND EDITION of this popular book we make the following prices on those now in stock: Paper covers, 30 cents each; cloth, 60 cents each. Never before has a book of such great value been offered for so little money.
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FOR SALE.—A No. 1 "Kodak," loaded. Price only $12.50. Address G. S. P., care PHOTOGRAPHIC TIMES.

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S. M., care Geo. Murphy, 57 E. 9th St., N.Y.

FELT BACKGROUNDS, $1.50 per yard; a 6 ft. x 6 ft. ground only $3, by mail $3.35.
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A RARE BARGAIN.—A 4 x 5 Waterbury Detective Camera, with two holders, in good condition. Will sell for $16. F. N. LORD,
Box 2304 N. Y. City.

THREE RARE OLD DALLMEYERS TO SELL.

One 3¼ x 4¼ Rapid Rect.....$21 00
One Miniature Port., 2 x 2½..... 15 00
One Rapid Port., 3¼ x 4¼..... 45 00

All old numbers. Bright as new. Made by Dallmeyer *in his prime*. List one-third higher.

E. W. NEWCOMB & CO.,,
69 West 36th St., N. Y. City.

S. P. C. EIKOQUINOL DEVELOPER.—This "ne plus ultra" developer for timed and instantaneous exposures, lantern slides and all other kinds of transparencies, photo-mechanical work and bromide paper prints is now in stock and for sale at 35 cents per bottle of 8 ounces. No other developer is now used by the members of Chautauqua School of Photography; no other has attained to equally fine results.

THE SCOVILL & ADAMS CO.,
423 Broome Street, New York.

PHOTOGRAPHIC BOOKS FOR SALE OR EXCHANGE,

By C. W. Canfield,

1321 Broadway, New York.

Photographie par Emulsion Sensible. A. Chardon, Paris, 1880 .....$0 10

American Annual, 1887, cloth..... 50
" " 1888, " 50
" " 1890, " 50

The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47..... 25

Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper..... 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English), Vols. I. and II. (except No. 18), 1890, 1891.

A few *very* odd numbers of Photographic Notes, Daguerreian Journal, Photographic and Fine Art Journal, Magic Lantern Journal, Photographic Herald, etc.

Employment Offered and Wanted.

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A first-class operator and retoucher, also an expert printer and toner, can hear of a good situation by addressing D. H. Swartz, Fort Worth, Texas.

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Position by first-class head printer. Address "Printer," No. 16 State St., Rochhster, N. Y.

Would like to engage with some photographer at very small wages at first; understand operating and albumen printing; also a very good retoucher; will be out of employment the first of July; samples sent on application. Address, B. W. Taylor, Photographer, Rocky Mount Franklin County, Va.

An operator of high repute, for all branches of studio and out-door work, will be pleased to treat with firm of good standing. Address in first instance for all particulars to the Editor of this magazine.

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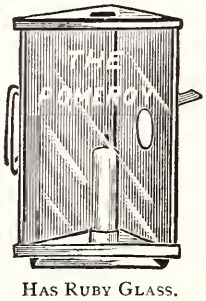
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Para-amidophenol (pure)	100 grains
Sodium sulphite (crystals)	3 ounces
Potassium carbonate	1½ ounces
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Very truly, JAMES BARKER.

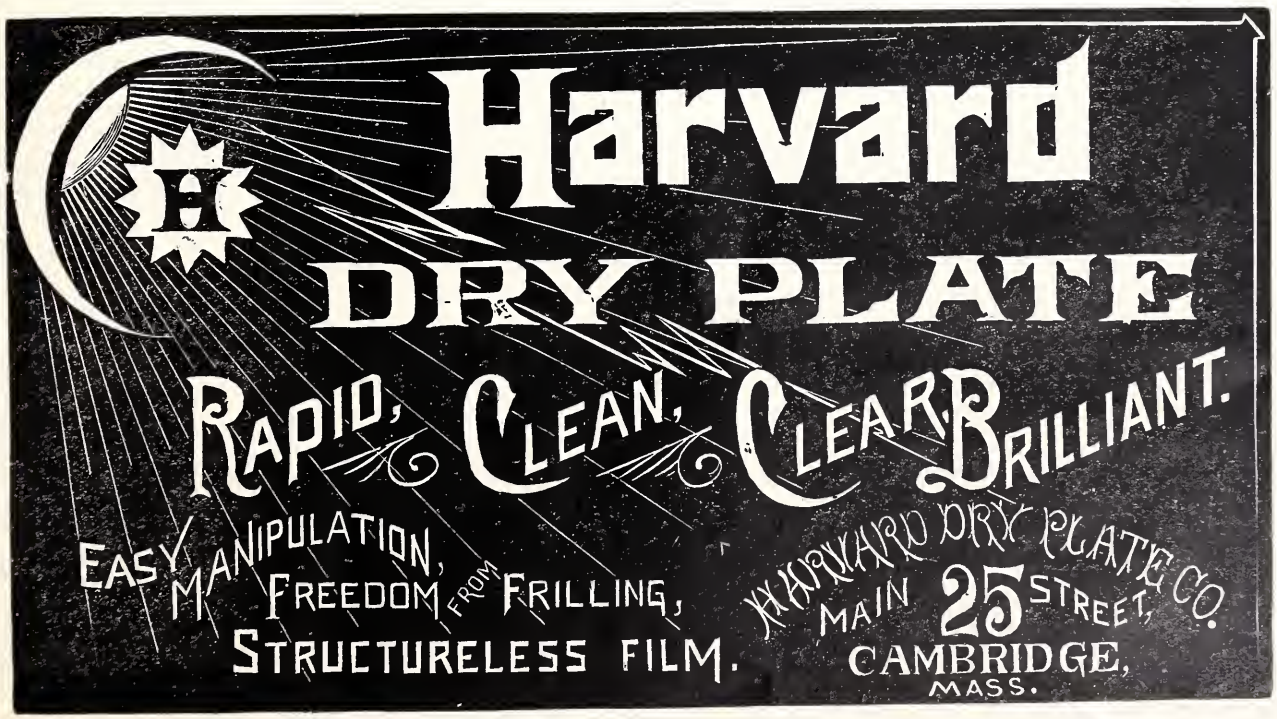
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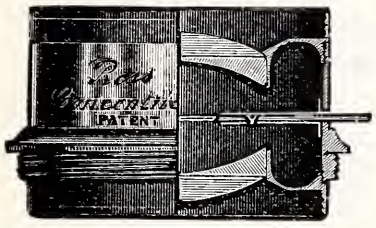
Depth 1¼ inches
Diameter 4 "
Weight 4 ounces.

Charge (small) 20 Gr., (costs about 1½ cents.)
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Size of room effectively lit when good lenses are used, about 25 x 30 ft.
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Time consumed in getting the lamp ready for discharge, 1½ minutes.

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It does **not** stick, nor does the surface of the print rub off.

THE PERFECTED BRADFISCH TONING AND FIXING SOLUTION is recommended for use with Aristotype Paper.

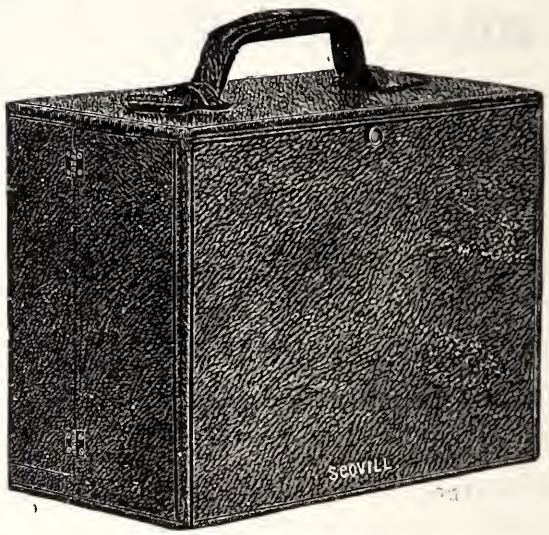
It works perfectly and is always clear.

For Sale by all dealers in photographic materials, and by THE SCOVILL & ADAMS CO.

THE 5 x 7 HENRY CLAY
Stereoscopic Camera
FOR TRIPOD AND HAND USE.

It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

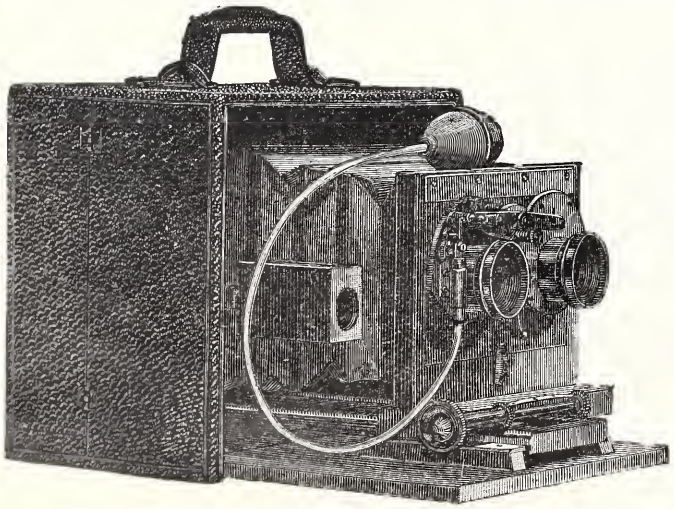
There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.



The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide ; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release,** $75.00

This camera can also be made with vertical sliding and swing front. By means of the former the proportion of sky and foreground may be adjusted ; the latter permits the taking of subjects which may be either above or below the level of the camera and still preserve the lines vertical.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, and with vertical sliding and swing front,** . $80.00

A 5x7 Roll Holder for Transparent Films can be furnished with either of the above forms of this camera for $15.00 additional. This addition would make the case about two inches wider and one-quarter inch higher.

THE SCOVILL & ADAMS CO., 423 Broome Street, New York.

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$5 FRANK MCLAUGHLIN'S $5

New $5 Hand Camera

Is not a toy, as some may have supposed, on account of the remarkably low price at which it is sold, but a good, practical working instrument, one that we can recommend as being superior in every respect to any camera sold at double the price. It will make pictures 4 x 5 size either snap-shot or on a tripod. More amusement and instruction can be had with one of these cameras this summer than will last you a life-time.

The Scovill & Adams Co.,

423 Broome St., NEW YORK.

Felt Backgrounds.

The Scovill & Adams' Plain Felt Background, recently introduced, is a great boon to all Photographers, both Professional and Amateur.

It is made of strong, thick and even stock, and is of an agreeable neutral drab color. It is especially suitable for vignetting. The texture of the cloth absorbs instead of reflecting light, and thus produces soft effects, and agreeable depth in print. The liability of defacement by water stains is obviated.

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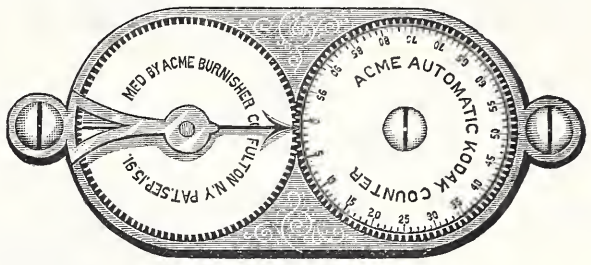
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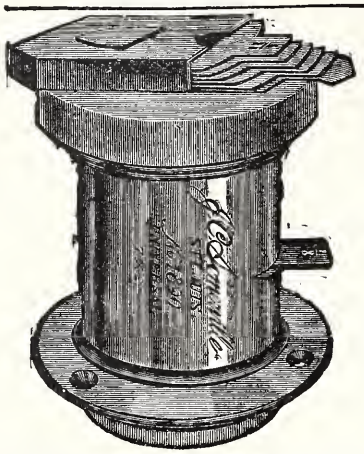
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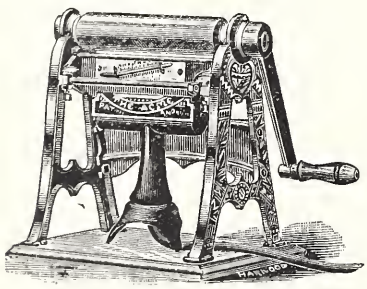
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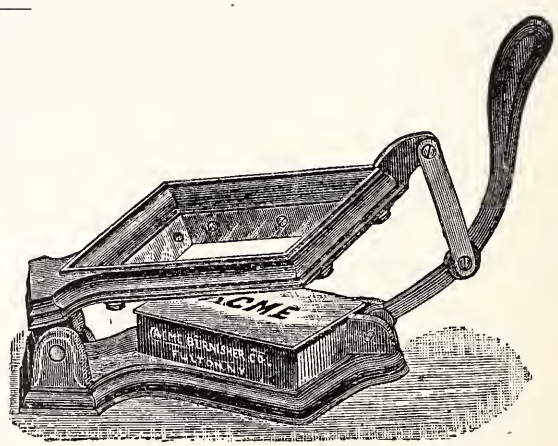
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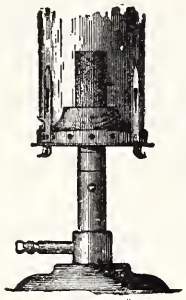
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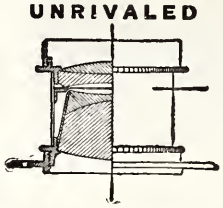
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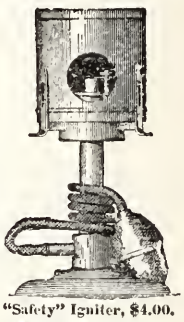
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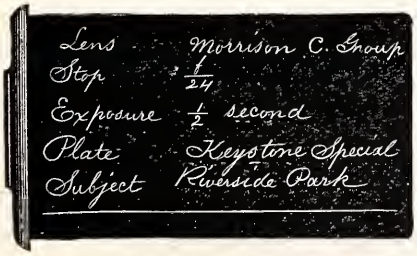
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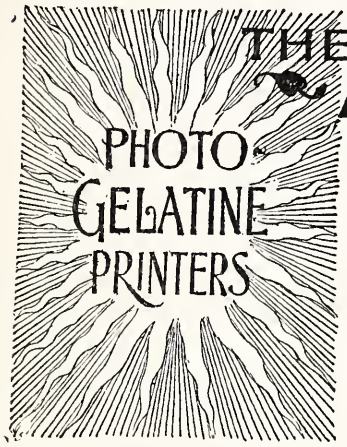
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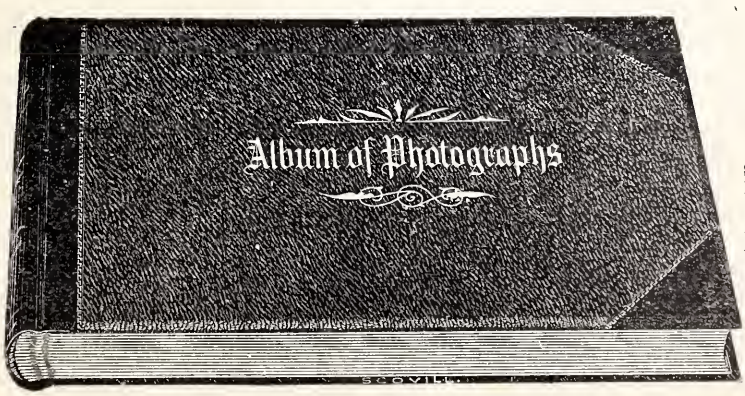
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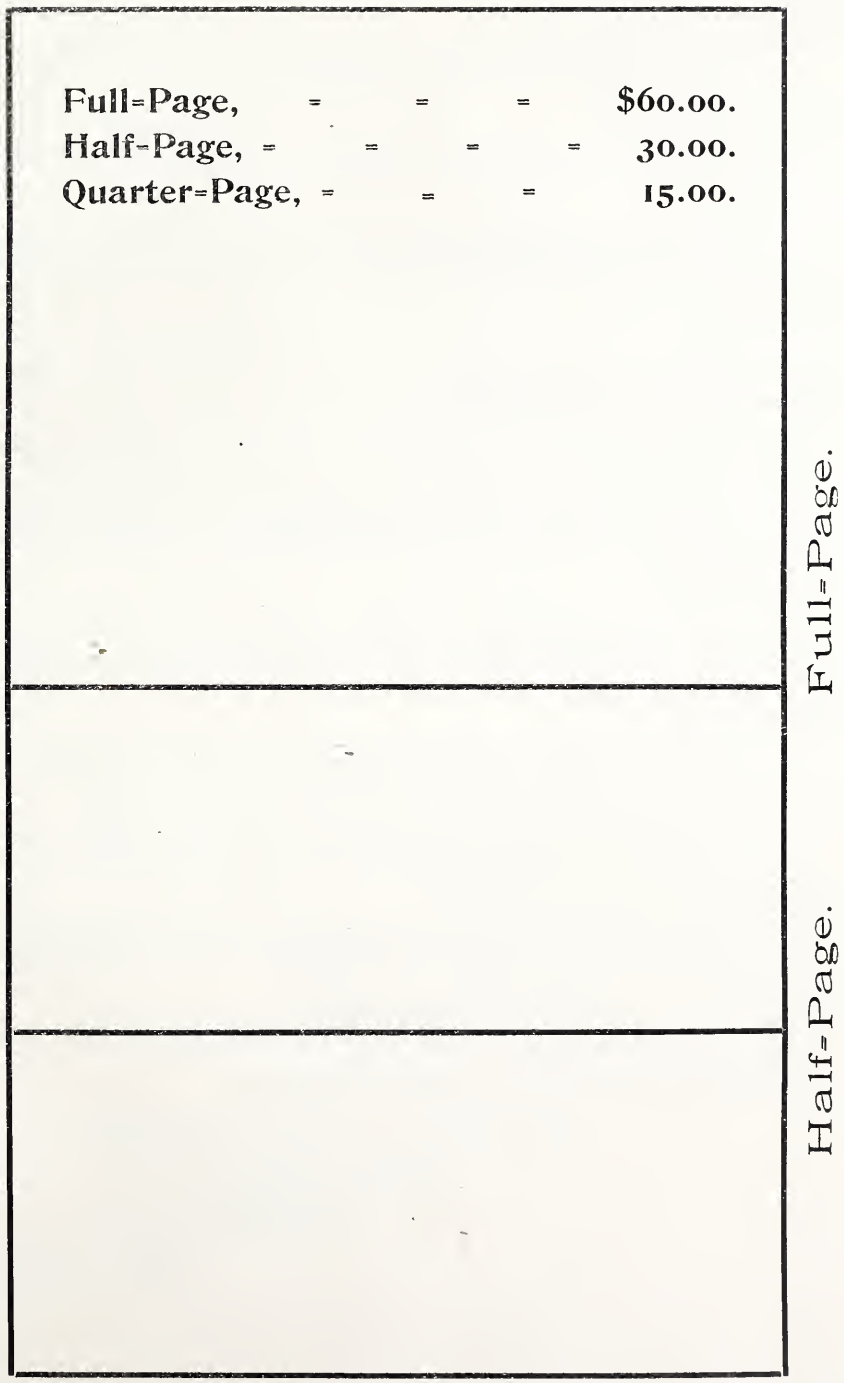
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AN ENGLISH COTTAGE.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. JULY 8, 1892. No. 564.

AN ENGLISH COTTAGE.

OUR picture this week is a typical English scene from a negative by Frank Russell Green, a young English artist, and an amateur photographer of conspicuous ability. The picture obtains a somewhat humorous interest from its title, so familiar to New Yorkers—"Broadway," which is the name of the little parish on which this old English cottage is one of the few quaint dwellings composing it. Mr. Green has chosen his point of view with trained judgment, and has given us a most attractive picture of an interesting subject.

EDITORIAL NOTES.

UNTIL lately only two mines of uranium were known, one at Rodruth, in Cornwall, the other at Annenberg, Saxony. Another has last year been discovered in the Bald Mountain in this country. Mr. Herman Reinbold has found at a little depth the following ores: Uranite, pechblende, uranium-ochre and trogerite. All are found in abundance and, with the exception of the first, can be commercially treated and converted into uranium salts. The chloride, nitrate and sulphate are employed in cerimics, glass-making and in photography.

On account of its rarity the price of uranium is quite high, over fifty dollars per pound. Therefore it could not be employed in the arts, although experiments made in England, France and Germany have shown that in small quantities it increases both the elasticity and hardness of steel.

If the discovery of Mr. Reinbold should prove as stated, the price of uranium will be sufficiently lowered in a short time to permit its application in many industries.

Aluminium now costs but fifty cents per pound. The *Revue Nouvelle* states that the German government has bought in this country twenty tons of this metal to manufacture the cooking material of the army.

Contrary to what is generally admitted the inoxidability and ductability of alumination is due to the impurities it contains. The pure metal is easily oxidized in the air; it is worked with difficulty, its resistance to traction is one-third that of steel, and its resistance to pressure one-sixth that of iron. Most of these inconveniences disappear in its alloys, specially that formed with titanum, from .5 to 10 per cent., which is inoxidizable, can be worked by the hammer and laminated, and thus acquire a great elasticity and hardness.

DIAMONDS fall from heavens! The mineralogists really seem to think it. A specimen of ærolithe found in Arizona near the Cañon Diablo by Mr. Foote, the learned mineralogist of Philadelphia, was examined by Professor Kœnig, who constated the existence of small cavities filled with a black matter containing some diamonds, but very, very small, having a diameter of one-half of a millimetre.

Mr. Eckley-Coxe, an ancient student of the School of Mines of Paris, lately sent to one of the professors of that school, Mr. Mallard, some specimens of the blocks of Arizona, and specially a stone weighing one hundred kilogrammes. Now a piece of these iron ærolithes, polished on one side, shows also in its cavities blackish particles, having from half to one millimetre in diameter, which scratch the corindon and even the white diamond. These particles are black diamonds, according to Mr. Mallard.

Hence the stones which fall from the celestial spaces contain diamonds.

We do not know the true origin of the diamond. In relation to the mines of the Cape, Mr. Daubrée has been led to say that the diamond was made in the great depths of the earth in the incandescent crucible of the matters in fusion, and that it is

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afterwards projected by the great chimney which furrows the grounds of the Cape. It is at the very bottom, in the sub-cellars of the globe, that would be made the crystallized carbon we call diamond. But the meteorites are considered as parts of ruptured worlds, samples falling on our planet of globes reduced into pieces, and among these pieces certain parts can provene from the deep regions, and they must contain some diamonds.

THE PLATINOTYPE.

THE platinotype, that beautiful process, which, over all the other non-mechanical methods of printing has the inestimable advantage of yielding absolutely permanent photographs, is not out of the reach of the amateur photographer. It is simple, expeditious, and presents even less difficulties than any one of the printing-out or developing silver printing processes. As to the cost of the prints it is higher than that of albumen prints, but not so very much. A dozen of cabinet photographs can be made for about fifty cents, labor not included, but this is more than compensated by the savings of the noble metal.

The original process is now public property. The patent granted to Wm. Willis has expired in England and in this country by lapse of time, the American patent of 1876 having its basis upon the English patent dated December 2, 1873.

T. Pizzighelli and Hubl have published in 1882 a complete theoretical and practical study of the platinotype for which they received the Voightländer's gold medal from the Photographic Society of Vienna. We have in a great part adopted their mode of operating.

The chemicals employed are: The potassic platinous chloride, ferric oxalate, potassium oxalate and hydrochloric acid. All these products are found in commerce. However the purity and composition of the ferric oxalate solution having a great influence on the result, it is advisable to prepare it one's self, moreover it can easily be done even by a person having no knowledge in chemistry: Dissolve 40 parts of dry (anhydrous) ferric sulphate in 400 parts of hot water and add 86 parts of pure crystallized sodium carbonate dissolved in 200 parts of hot water, then wash the precipitate by decantation with cold water until neutral to test paper, and, this done, add 49 parts of pure oxalic acid in powder. Lastly the precipitate is dissolved add water to make up 187 parts.*

* This solution contains

Ferric oxalate	20 parts
Oxalic acid	6 parts
Water, distilled	100 parts

Only distilled water should be employed to prepare the solution, it being free from organic matters and objectionable salts. The solution should be kept in a dark in a well-corked vial.

For use the potassic platinous chloride is dissolved in six parts of *distilled* water.

The sensitizing solution consists of equal volumes of the potassic platinous chloride and of the ferric oxalate solutions, to which is added 5 per cent. of water.

Only a small quantity—say, 1 ounce—should be prepared at a time, and that just before use, for the mixture does not keep for more than fifteen or sixteen minutes.

Before coating the paper—good drawing paper—should be sized, which is a condition in all the processes based on the reduction of the ferric salts to obtain brilliant and not sunken images.

To size the paper we use the following solution:

Gelatine	200 grains
Alum	65 grains
Water, distilled	32 ounces
Alcohol	8 ounces

Let the gelatine swell in water for about half an hour, dissolve in a water bath, then mix by small quantity the alum dissolved in, say, four ounces of water kept aside for that purpose and hot; lastly add the alcohol, filter through flannel and use the solution at once while it is warm.

The paper being cut in sheets 8 x 10 inches and marked on the felt side is immersed face upwards in the sizing solution, sheet by sheet, and there left for a period of from five to six minutes, the whole is then turned over, and each sheet is very slowly removed and hung up to dry.

The operating-room should be heated to about 70 deg. Fahr., in order that the excess of gelatine solution does not take into a jelly, but drains off.

When dry, the paper is sensitized by brushing. For that purpose three or four sheets are placed on a double of blotting paper, and being secured on the board by silvered drawing pins, one pours in the middle one and a half drachm of the platinum solution (six drachms for a sheet 18 x 24) which should be spread as rapidly and as evenly as possible by means of a Buckle's brush. Instead of this the writer prefers using a piece of canton flannel (folded in two) tied between two strips of glass plate two inches wide by, say, four inches long, and projecting about half an inch. Several of this kind of flat brushes should be at hand, for it may happen that, notwithstanding the care which should be taken in washing the brush every ten minutes or so, the brush becomes impregnated with the

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platinum solution in a state of decomposition, which produces striæ and stains on the proofs.

Before use the projecting part of the canton flannel should be very slightly damped in order that it does not absorb much of the sensitizing solution.

After sensitizing the paper is allowed to absorb the solution for about five minutes, *until surface dry*. It is then desiccated before the fire. This may be conveniently done by suspending the sheets near a gas stove, etc., taking care that the temperature does not exceed 100 degrees Fahr.; 95 degrees is a good average.

When quite dry, the sensitive paper—it is a little hygroscopic—should be stored in a desiccating box or wrapped between sheets of very dry blotting paper prepared by immersing it in a solution of sodium bicarbonate and drying before the fire. The sensitive paper will thus keep for a few weeks.

The most brilliant proofs and the purest whites are always secured by using the paper recently prepared and, most especially, by being kept absolutely dry before and after exposure, until the image is developed. Dampness is the great enemy in this process.

The platinotype process now described is a developing process. The paper is exposed under the negative in direct sunshine in preference. It is more than twice more sensitive than silvered albumen paper. When a weak brown image is visible, the exposure is sufficient.

The image is developed with a concentrated solution of potassium oxalate, say, 2 : 7, acidified by adding a solution of oxalic acid until the blue litmus paper turns red at once.

If the oxalate solution be used neutral or alkaline, the pictures develop flat, but if acidified as said above they come out with good details and strong black.

The developer should be heated in an agate vessel to about 175 deg. Fahr. This is the normal temperature. It may be heated to nearly the boiling point if the print is under-exposed, or employed nearly cold in case of great excess of exposure. Of course the best results are always obtained when the exposure is nearly correct.

The developer can be used over again.

To develop, the print is placed in a porcelain or agate tray, then, over it, the warm oxalate solution is poured with a sweep so as to cover the whole print at once.* The picture appears immediately. It may be removed after a moment and held over the tray until the details in the lights are well out, when the print should be immersed in water acidified with hydrochloric acid, 2 : 100, for three or four minutes to eliminate the iron salt.

The hydrochloric wash should be renewed two or three times to insure a complete elimination of the salt of iron. Finally the prints are washed in running water during two hours to remove all traces of acidity,

The following developer is given on the authority of Mr. Berlonitto to obtain warm sepia tones :

Saturated solution of oxalate of potassium	120
Saturated solution of chloride of copper	12
Oxalic acid	1.5

It is employed as said above.

P. C. Duchochois.

* Small proofs may be immersed one after another in their turn. The development is immediate ; therefore the work proceeds rapidly.

PRESERVATION OF DRY-PLATES.

The question of the best manner of packing dry-plates seems as far from satisfactory settlement as when the plates were first introduced. Every manufacturer claims to have the best system, yet complaints are as numerous now as they were some years ago. It seems to be a simple matter to pack the coated plates so that they may remain free from dust and scratches, without adding materially to their bulk or weight; but, in the experience of amateurs and professionals alike forty per cent. would be a large average of plates kept perfectly clean. The greatest affliction appears to be the dust particles, which, if not removed prior to the exposure of the plate in the camera, make transparent spots that would try the patience of a modern Job. These spots are the almost invariable accompaniment of the mat or strip system of packing. The only advantage of placing a thin strip of cardboard between the plates at the edge, is to separate them. This is an invitation for dust to collect in the space remaining. Add to this the particles of paper from the rough edge of the strip and you have some conception of the benefits of this system. Again, the strips have a pleasant way of leaving their mark on the edge of the plate, sometimes in the form of a black fog that penetrates through the film and, if the plate has stood on the stock-dealer's shelf for some time, works well into the centre. Sometimes they make an irridescent stain on the surface that grows brilliant under development, deceiving the innocent tyro into the belief that he has discovered color-photography. For some time the manufacturers packed their plates face to face, six in a package, well wrapped in black paper. This idea was hailed with joy, until it was discovered that a great many of the plates were scratched by the introduction, in packing, of fine

particles of glass. This then was abandoned and tissue paper was tried. This seems more nearly to fill the long-felt want. Most of the plate-makers who have adopted the tissue paper system of packing use either the single cut sheet or a long strip wrapped back and forth between each pair of plates.

Mr. Gustav Cramer, after much experimenting for a long time, adopted the plan of packing the plates face to face with about five thicknesses of tissue paper between them. This gives far better results than any other system I have seen. Mr. Cramer, at my request, packed some ten dozen, 6½ x 8½, plates in this way, for use abroad. These plates were shipped by me to New York, carried thence by steamer to England, thence to the Continent and back to St. Louis, before any were developed; yet they remained free from dust particles and unscratched. These plates travelled 7000 miles uninjured.

In spite of the fact that the tissue paper accomplished so much, complaints of its use were received to such an extent that Mr. Cramer was obliged to return to the strip system. One photographer, indeed, said that he invariably succeeded in getting the paper into his plate-holder. It is really surprising that he did not get his tables into the developing solution. We will have no really good system until the manufacturers meet and, after exhaustive experiment, adopt a uniform method best adapted to the conditions.

The universal adoption of some system would tend to discourage the "kicker," and thus materially benefit supplier and supplied.

Robert E. M. Bain.

LENSES WITH "FIXED FOCUS" FOR HAND CAMERAS.

From an article in one of the American Photographic Annuals entitled "Hand Cameras" it would seem that there are still some who consider that, apart from focal length and aperture, certain makes of lens have properties apart from marginal definition particularly fitting them for use with hand cameras of fixed focus. That, given a certain focal length, and a certain aperture, one kind of lens may have the property of bringing near objects and the extreme distance into focus at once, whilst another has not Now this is a complete delusion, the thing being absolutely fixed by focal length and aperture. The assumption is that no "diffusion of focus" arrangement is used for a hand camera, and that lenses without spherical aberration are selected. "Diffusion of focus" arrangements, or spherical aberration purposely left uncorrected may have uses for some kind of photography, but I imagine no one would recommend the presence of them in lenses for hand camera work.

The persistence of this delusion about depth of focus probably arises out of two things. One is that, angular aperture remaining the same, the depth of focus varies greatly with a small change of focal length. Another is that a very little difference in the final adjustment of the position of a hand camera lens of "fixed focus" before the final fixing of the relative position of it and the plate or film may make a very considerable difference in the apparent depth of focus. Thus two lenses precisely the same in every way will be fixed to two hand cameras. Both will show the distance at least as nearly in focus as is pictorially demanded but one will show objects in the foreground in good focus that are only half as far away as the nearest in that are in sharp focus by the other lens. It is simply a question of seeing that, if anything the lens is fixed farther from the plate rather than nearer to it, in relation to the mathematically correct distance for a distant object. It is not necessary to put the distance at all perceptibly out of focus to make a very appreciable difference in the nearness of the nearest foreground object that may be in focus. This is a point that the makers of hand cameras with fixed focus should pay the greatest attention to.

A word as to the focal length of lens that can be used with a camera having no means of adjustment, and the size of picture that may be used with it. Of course, as every one knows, that we limited to a very small size; and, indeed, I incline to think that no size larger than that intended for the production of lantern-slides by contact printing, should be attempted with cameras of fixed focus. There are several reasons for this. One is that the lens must not be of the wide-angle kind, or of short focus relative to the size of the plate worked. The writer mentioned above states that "it must be plane . . . . that you will require a short focus one, and one of the wide-angle style or symmetrical kind!" This is about the worst advice that could be given. Further on he says: "We are often told that a W. A. lens will give a distorted picture, and it is wrong to use one; now this is all bosh; of course, if you get a cheap and not properly corrected one, it will do so (so will a bad R. R.)."

Apart from the elegance of this statement, and from the fact that all who have any knowledge of perspective know that it is not "bosh" that a wide-angle ought scarcely ever to be included in pictorial

photographic work, it is worth mentioning that one, at least, of the illustrations used to illustrate the paper that I quote from is a painful example of the distorted perspective arising from including too great an angle! A lens "cheap and not properly corrected" will give just the same perspective as an expensive and perfectly corrected one of the focal length.

The lens must be of long focus compared with the size, not necessarily of the plate in the camera, but of the part of that plate that is to be printed from. Now the greatest length, or height of the opening in a lantern-slide, is commonly only $2\frac{3}{4}$ or, at the most, $2\frac{7}{8}$ inches, and a lens of about 4 inches in focal length is sufficient for this size.

Next as to aperture. For hand camera work an exposure shorter than for almost any other kind of "instantaneous work" is necessary. The reason is that so slight and angular motion of the hand at the time of exposure corresponds with so large a motion of the object across the field. I have done a large quantity of hand camera work during the last two or three years. At first I used a shutter giving exposures of $\frac{1}{50}$ of a second. I found the percentage of loss by motion of the camera during exposure was very great. Perhaps this was partly because I do not believe in holding a hand camera under the arm, or against the chest, but think it should, in most cases at any rate, be held on a level with the head, and there is no doubt that it is more difficult to hold it steady in this last mentioned position than in either of the others. I had to get a shutter working at $\frac{1}{100}$ of a second before the failures through motion of the camera during exposure were eliminated. Such an exposure, however, even using the rapidest of plates, involves a large aperture. I have found it necessary to use a lens that will work at No. 2 U. S., that is to say $f/56$. This means an aperture approaching $\frac{3}{4}$ inch. With the focal length and aperture mentioned it will be found that, if the final focusing has been done in the way mentioned, foreground objects well within 20 feet of the lens will be sharp, and this is sufficient in nearly every case, because it must be remembered that this lens, on the very small plate that would be necessary were the plate to be no longer than the picture, takes in only a narrow angle, and it is not, therefore, necessary to get close up to the subject as it is if a wide angle be included.

As to the actual adjustment of the lens, I have mentioned the principle on which it should be done above, but I now describe an actual method of working that may be useful to the makers of hand cameras with fixed focus. In the first place, however, let me say that there may be considerable difference of opinion as to how much the distance should be put out of focus, some thinking it advisible for artistic purposes that it should be allowed to be distinctly out of focus. By following the course now to be described, the amount of blurring in the distance will be such that it is not visible without magnification, except to those of very keen eyesight, looking very closely at the negative, that it is visible on the screen to a slight extent, but never offensively so, the distance appearing slightly softened, but not "blurred."

The lens is very accurately focused for a distant object. The object selected should be something sharp and clearly cut at a distance of at least 100 yards, the ground glass should be of the very finest quality, and a really high-class eyepiece should be used. A good "focusing magnifier" will do as a makeshift, but any one making the final adjustment of a number of hand cameras ought to have something better, and of shorter focus than the usual "focusing magnifier."

This having been done, the distance between the lens and the ground glass is increased by a small amount which will depend on the maximum working aperture of the lens. If it works at $f/56$ the adjustment should be one-twentieth of an inch; if it has a maximum aperture of only $f/8$ the adjustment should be one-twelfth of an inch.

If these adjustments be doubled, the distance will be quite perceptibly out of focus, but, on the other hand, objects well within 15 feet with the larger aperture, within 10 feet with the smaller, will be sharp.

As to the size of plate or film to be used with a lens of the focal length or an aperture mentioned above, it is clear that $3\frac{1}{4}$ inches square is sufficient. It will, however, probably be found most convenient to use quarter plate, because, for one thing that size of plate is to be had wherever dry-plates are sold, $3\frac{1}{4}$ square is not everywhere to be had. Another reason is that so much margin is allowable in "aiming" with the camera, and there is such great capacity for correcting the fault that arises from having the camera tilted to one side or the other at the moment of exposure. The limits of the picture to print directly lantern size should be marked on the glass of the finder, both horizontally and vertically, and every effort should be made to keep within them, but, if the "picture" that was wanted comes a little to one side or the other, or too high or too low, the thing is not of consequence. It is true that, theoretically the perspective of a photograph is not correct if a bit of the negative only, more to one side or end than to the other is utilized, and the fault may be quite

apparent if a wide-angle lens was used in making the photograph. It will not be appreciable, however, in the case supposed, that is to say, where the lens is of 4 inches focus, the plate is $4\frac{1}{4}$ inches long, the picture to be printed from it at least 22 inches long. If we take into consideration the loss of the margin of the plate by the rabbet of the slide—put at $\frac{1}{8}$ inch—it will be seen that the picture cannot be more than $\frac{5}{8}$ inches out of centre, and that will not show a perceptible fault in perspective with a lens of 4 inches focus.

It is well known that achromatization is not absolutely necessary in the case of lenses of fixed focus. Indeed, it is not necessary with any small cameras that are to be used with one lens only, so long as the photographing of objects on any scale approaching actual size is avoided, as an adjustment for the compensation of the chromatic aberration can be made by moving the lens a little nearer the ground glass after focusing, but before finally fixing the relative position of lens and plate. It will be seen that this adjustment is in exactly the opposite direction to that described above, and it is just possible that they might counteract each other in certain cases, but it is not likely. The amount of adjustment necessary for chromatic aberration must be decided, and, the adjustment first described being put down as a plus, that for chromatic aberration as a minus, it must be found whether the distance between the lens and the ground glass has to be increased or decreased after focusing. There are, however, reasons why quite as good work cannot be expected from lenses not achromatized as from those that are, even if the adjustment described be made.

W. K. Burton.

NOTES ON VARYING THE COLOR OF PLATINOTYPE PRINTS.

[Read before the London Camera Club.]

The subject of the few notes I have to offer you is one I should not have thought worth bringing before your notice, but for the extravagant claims made by several prominent workers, if not authorities, on platinum printing, to the effect that it is impossible in any way to affect a properly completed print in platinum. Let me say at once that I am a devout believer in the infallibility of platinum as regards permanence. So far as I have tried, and I have tried, the paper has succumbed before the metal. But, though I believe it is impossible for practical purposes to reduce the image when once formed, it is on the other hand a perfectly simple matter to add to it, and in so doing to change its color.

When I first tried platinotype, I naturally turned out a fair proportion of underprinted proofs. About the same time I read Mr. Lionel Clark's paper on toning and intensifying silver prints (*Camera Club Journal*, 52), and noticing that he intensified a platinum-toned image with silver, it seemed reasonable to try and do the same to a purely platinum one. The result was successful.

For the purposes of experiment, I have mainly used three kinds of platinotype prints: the plain black, the black developed with the addition of mercuric chloride, and the plain sepia. The acid baths were of full strength, to ensure the removal of the iron, and frequently I have used an extra bath with a double dose of acid in it.

The intensifier is the old acid pyro and silver, as suggested by Mr. Clark.

5 to 10 drops of glacial acetic acid.

About 1 grain pyro.

About 2 drops of silver nitrate (60 grains to the ounce).

1 ounce of water.

The prints are wetted first in the acid and water, and then the pyro and silver are added in small quantities until action begins. Rapidity of action is dependent on temperature and the balance between the acid and the pyro; but when once started it is apt to go on so quickly as to require some care in avoiding fog. Recently I have been using a fairly strong solution of hydroquinone, in place of the dry pyro, and have found the action slower and more under control. There is a trifling difference in the resulting color, too.

The color and form of the deposit vary with the rapidity with which it is formed, and with the color of the original print, and of course, the color of the *final* result still further depends on the *depth* of the original print.

On the black paper, plainly developed, the intensified image is black, sometimes quite a blue-black, with a tendency toward red, with rapid action. I have a print that has a combination of both tones, and somewhat resembles a regular gold-toned silver print on a matt-surface. The redness can be got rid of by simply warming while damp, when it at once turns a cold black. If the black paper has been developed with the addition of a small quantity of mercuric chloride, the silver deposited is a purple-brown. By varying the quantity of mercuric chloride in the oxalate bath, by adding sodium carbonate to it, and by starting from more or less underprinted proofs, a long

range of color is possible, from yellow to red, or a good series of purple-browns or brown-blacks. Personally I do not care for any of the tones obtained this way, except the brown-blacks.

The sepia paper intensifies very well, giving a series of browns tending towards yellow that represent *true* sepia not at all badly. The best effects are obtained from proofs a little over half-printed. If very much under-printed, the color is too yellow to be pleasant.

The great differences in the color of the deposited silver are worth noting. Probably it is the presence of more or less mercury in the platinum image that is the cause, and this would seem to suggest that the silver is not in a pure state. I mean that the colored silver is not entirely an allotropic form of the metal, but partly an organic compound; for which conclusion there are other reasons as well.

I have found that when the depositing action is at all rapid, or is carried on to any considerable extent, a peculiar granularity is certain to show on the black paper. The grain is to my mind pleasant rather than otherwise, especially where sharpness is not wanted. It suggests stipple work, the dots separating well from one another. The sepia does not seem to give this grain nearly so rapidly.

Having obtained a silver image on top of the platinum, after-manipulation to an almost unlimited extent becomes possible.

The image tones readily with gold, though the results are not very pleasing. No doubt it would tone readily enough with platinum.

It intensifies with mercury, and on a sepia foundation a very full brown results; this again can be toned with gold, which introduces a blue element.

The uranium intensifier introduces a fresh series of color possibilities.

The principal point of practical interest about this use of silver intensification is the very vital one of permanence. The deposited silver is generally considered unstable, though I notice that Captain Abney recommends this form of intensifier as the only one that can be depended on to give permanent results on a gelatine dry-plate. As far as I have tested for this purpose, prints dried by heat have not changed at all afterwards, though they change in the drying. Those dried in the ordinary way seem to alter their color with time, but in no way to fade. In fact the difficulty is in the opposite direction, and I am not sure of having overcoming it at present. An instance of what I refer to occurred in this way. In washing, the print lost a great deal of its depth, and instead of being a rich brown, became a bright mustard color. After it was dry it was exposed to strong sunlight, when it darkened beyond its original depth, and the high lights and margins fogged to a slight extent. I have used a fairly strong solution of ammonia for fixing purposes, but the preliminary washing must be thorough or stains will occur. I have tried hypo, but have found that unless used until the image is much reduced, the darkening still takes place, though not the fogging. I was under the impression, that theoretically, silver alone was deposited, but practically some sensitive salt is as well, a fact which may perhaps explain the change of color and more permanent results when the prints are dried by heat.

However, considerably more secure results may be had by toning with uranium and then removing the silver altogether with potassium-ferricyanide and hypo. As there is no silver left, a moderate washing suffices.

I have within the last day or two been trying the uranium solution direct on the platinum, and have certainly altered its color by that means.

But whether the uranium is precipitated in proportion to the platinum present, as the silver is, or only as a kind of fog all over, I am not quite certain. A thin half-tone print I have here seems not unsatisfactory.

Whether by silver or uranium direct, or uranium by means of silver, I think you must acknowledge that the claims sometimes made that a finished platinotype print is unalterable is, as commonly understood, not quite accurate; whether you care for the results or not is another matter.

I would like to ask, in conclusion, whether it is not possible to precipitate other metals than silver and uranium from their soluble salts slowly enough for the metallic platinum to exert its attractive force? If the deposition of the silver is due to anything resembling electrolytic action, there ought to be means of getting other metals, more stable, down too.

Mr. Briant showed a print on sepia paper, which had been printed out under the negative. Half of it had then been intensified with silver, and afterwards treated for a few minutes to a solution of potassium ferricyanide, and then to hypo. The part that had been intensified, etc., showed a small but perceptible amount of reduction.

Roland Briant.

THE firm Steinheil Sons has proposed to furnish supplementary lenses to all their aplanates and antiplanets to convert them into photo-telo-objectives,

Dr. Rudolph Steinheil's practical experiments having conclusively proved the possibility to add negative lenses to any or all good objectives.

Correspondence.

HOW TO AVOID REFLECTION ON SILVER WARE.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: In your "Queries and Answers" of last issue, I note enquiry made by "Lehnhardt," "How to Get Rid of Reflection on Silver Ware." Will you pardon me if I suggest to Lehnhardt to fill the article with cold ice-water, a few minutes before making the negative, and he will not only get rid of the reflection, but get more detail than he ever expected from polished silverware.

Pierre Havens.

Jacksonville, Fla., June 24, 1892.

A LETTER FROM JOHN CARBUTT.

ANOTHER letter from Mr. John Carbutt, the pioneer dry-plate manufacturer of America, has been received from him during his European tour.

This one is dated Paris, June 17th, and speaks especially of his outing in England.

He writes:

"We had one delightful day long to be remembered and that was last Saturday. A party of six took train to Windsor, went through the staterooms of the Castle, lunched, and then took carriages to Stoke-Pogis, a rural and most lovely country church and yard.

"I made several exposures with the Henry Clay camera. Gray's monument is in the field as you approach the church. His tomb and the yew under which he sat while writing his elegy, are in the picture. Thence we went to Burnam Beechers and back to Windsor, taking in Eaton College on the way.

"It is simply impossible to describe with the pen the beautiful rural scenery—the day a glorious and perfect English day for an open carriage drive. The sky full of clouds and the sun was just strong enough to temper the chilly air.

"Then the ride Wednesday from London to Canterbury through Kent, and its hop fields just beginning to blossom was also a ride long to be remembered.

"To-day it has been raining and the air is chilly, so Paris is not looking her best. Tuesday we expect to start for Berlin, Dresden, Leipsic, Heidelberg, Frankfort, Mayence, and down the Rhine on steamer to Coblentz, Cologne, Düsseldorf, Antwerp, Brussels, Ostend, Dover, and back to London, thence to Edinburgh, and by steamer 'City of New York,' August 3d, to the States and to business."

PIZZIGHELLI'S IMPROVED DIRECT PLATINOTYPE PROCESS.

IT will be remembered that in the well-known platinotype printing-out process, invented some years ago by Pizzighelli, sodium ferric-oxalate was given as the light-sensitive substance with which the paper was to be prepared, and sodium oxalate as the developing agent. Recent experiments made by the inventor have, however, shown that it is better to substitute for the sodium ferric-oxalate the more sensitive ammonium ferric-oxalate, and for the sodium oxalate the more conveniently procurable and more soluble potassium oxalate. By these modifications the paper not only becomes more sensitive, but the prints show greater brilliancy—two factors which are certainly not to be undervalued. The preparation of the paper may be done in the same way as in the former process—namely, the paper can either be coated with arrow-root paste and afterwards with the sensitizing solution, or the preliminary preparation may be omitted, and the plain paper coated with the sensitizing solution, which for this purpose has been thickened by the addition of gum-arabic. In his contribution to Dr. Eder's "Year Book of Photography" for 1892, from which I take the following description of the process, the author mentions a third method of preparing the paper, which seems to be noteworthy, though, as he says, it is still in the experimental stage. In this method resinous solutions are employed for the preparation of the paper; as, for instance, 1 per cent, alcoholic solutions of damar, colophony, benzoin, etc., with which the paper is impregnated by immersion (twice). Papers so prepared will, of course, give more brilliant prints, on account of the pores of the paper being closed for the greater part by this treatment, and the image consequently lying on the surface.

With regard to the sensitizing solutions, the new formulas for *the sensitive mixture, for arrowroot, or resin paper*, is the following:

STOCK SOLUTIONS.

A1	Potassium chloro-platinite	10 gm.
	Distilled water	60 c.c.
B1	Ammonium ferric-oxalate	40 gm.
	Potassium oxalate solution (5 per cent.)	100 c.c.
	Glycerine	3 c.c.
C1	Iron solution B1	100 c.c.
	Potassium chlorate solution (1 : 20)	8 c.c.
D1	Mercuric chloride solution (5 per cent.)	20 c.c.
	Potassium oxalate solution (5 per cent.)	40 c.c.
	Glycerine	2 c.c.

As to the preparation of Solution B1, the potassium oxalate solution should be heated up to about 40 deg. C., and the ammonium ferric-oxalate dissolved in it. Upon cooling, some ammonium oxalate will be precipitated; the clear solution should then be filtered off, and kept in the dark. In order to prevent the formation of mould, a drop of carbolic acid should be added to the liquid.

For sensitizing a sheet (demy size) when black tones are desirable, and if negatives of medium density are used, we must take:

Solution A1	5 c.c.
Solution B1	6 c.c.
Solution C1	2 c.c.

For harder negatives, the quantity of Solution C1 should be diminished or entirely omitted, and Solution B1 increased to the same extent; in the case of softer negatives the reverse is to be adopted.

For sepia-brown pictures we mix:

Solution A1	5 c.c.
Solution C1	4 c.c.
Solution D1	4 c.c.

Sensitive Mixture for Plain Paper.—In this a preliminary preparation of the paper is not necessary, as the thickening material is mixed with the sensitizing preparation. The new formulas for this method are the following:

A2	Potassium chloro-platinite	10 gm.
	Distilled water	60 c.c.
B2	Ammonium ferric-oxalate	40 gm.
	Gum-arabic, powdered	40 gm.
	Potassium oxalate solution (5 per cent.)	100 c.c.
	Glycerine	3 c.c.
C2	Iron and gum solution B 2	100 c.c.
	Potassium and chlorate solution (1 : 20)	8 c.c.
D2	Mercuric chloride solution (5 per cent.)	20 c.c.
	Potassium oxalate solution (5 per cent.)	40 c.c.
	Gum-arabic, powdered	24 gm.
	Glycerine	2 c.c.

Solutions C2 and D2 being sensitive to light, they must be kept in the dark. Solution B2 is prepared by heating the potassium oxalate solution to about from 40 to 50 deg. C., and dissolving in it the ferric salt and the glycerine. The warm solution is then gradually added, with stirring, to the gum-arabic in a mortar. The further procedure is the same as in the older process. The thick solution is muddy, and of a greenish color. It is also sensitive to light, and subject to the formation of mould. For black images and negatives of medium density the paper (demy size) is prepared with the following mixture:

Platinum solution A2	5 c.c.
Iron and gum solution B2	6 c.c.
Gum and chlorate solution C2	2 c.c.

For sepia-brown images take—

Platinum solution A2	5 c.c.
Gum and chlorate solution C2	4 c.c.
Gum and mercuric chloride solution D2	4 c.c.

The preparation of the paper is the same as described in the original instructions. The numerous small air-bubbles formed during the application completely disappear when the coating is smoothed with a badger-softener. Drying is done in the usual manner, the dry papers showing a slight gloss, caused by the gum layer. After drying the papers are preserved in the chloride of calcium box.

The printing process with these papers is generally familiar. The action of light should go on until the print shows the intensity it should have when finished. The time of printing may, however, be shortened if, after the deepest shadows have appeared, the prints are developed cold. For this purpose either the 5 per cent. potassium oxalate solution may be used or a 5 per cent. aqueous solution of washing soda.

The printing being completed, the pictures are fixed in a bath of hydrochloric acid 10 parts, water 800 parts, which is changed two or three times.

This bath may, however, be replaced by the following one, recommended by A. Huszar:

Sulphate of copper	10 grammes
Water	1000 cc.

which is employed in the some manner as the hydrochloric acid bath. Finally, the prints are washed in ordinary water and dried.

It must be borne in mind that platinotype prints in the wet state are always more brilliant and lighter than when dry. It will also be observed that, in drying, some of the details of the shadows which were visible on the wet prints will be lost, and that at the same time the intensity of the dark parts increases to some extent. To avoid this, the prints after washing may, according to A. Lainer, be treated as follows. A solution is prepared of

Gelatine	125 grammes
Water	1000 cc.
Powdered alum	125 grammes

The gelatine is dissolved in the usual manner in the water, and the mixture heated up to the boiling point. After removing the solution from the fire, the alum is added, and dissolved by stirring. Before use, mix

Gelatine and alum solution	1 part
Water	1—2 parts

The mixture is kept warm in the water bath, and the dry platinotype prints are immersed in it for some minutes. They are then placed for a short time in a dish with cold water, and after removing them, dried as usual. The prints treated in this way are much more brilliant in appearance than those finished in the usual manner.

I am convinced that the above-described new modification of the Pizzighelli direct platinotype process will secure many new adherents to this beautiful printing process.—*E. A. Gunther in the Photo. News.*

Notes and News.

Marshall Bros., Photographers of Cazenovia, N. Y. have dissolved partnership. The business will be continued by C. P. Marshall.

Kurz & Nuss, Photographers of Hurley, Wis., have dissolved partnership.

Alfred A. Adt, successor to Adt Brothers, Waterbury, Conn., has opened new art rooms, in connection with his photograph gallery, where fine paintings, engravings, etchings, water colors, and all kinds of pictures, and fine art goods will be kept on exhibition and sold.

The manufacturers of the Dresden Three Crown Paper have made a great success of the New Rose brand, which gives universal satisfaction, and is an improvement upon their pensé color, which they introduced some years ago, and which was so widely imitated.

Astro-Photography.—The regular meeting of the Chicago Camera Club, occurring Saturday afternoon, July 2d, was held at the Kenwood Physical Observatory, where Prof. Geo. E. Hale, Director of the Observatory, demonstrated the method of Astro-photography.

George G. Rockwood.—As will be seen from our "Business Notices" this week, Mr. Geo. G. Rockwood, with his characteristic generosity to the photographic fraternity, has decided to make public his process of Photo-Ceramics or Burnt-In Photography.

By giving this process to the fraternity, a new art will at once become widely popularized, and all will be benefitted. Mr. Rockwood is only following his precedents in this generous action, which are all opposed to restrictive processes.

Miss Frances Benjamin Johnston, the well-known lady amateur of Washington City, is turning her camera to good account, in illustrating highly interesting articles for the magazines. She has contributed the leading article in *Demorest's Family Magazine* for the two months of February and March.

The February article was on the interesting subject of "The Mammoth Cave," and was profusely illustrated from flash-light photographs, made by Miss Johnston.

"Through the Coal Country with a Camera," is the subject of her article in the March number. It is also illustrated by many flash-light pictures, made in the coal mines.

"The Evolution of a Great Exposition," will be the next subject to command her attention, as a writer and a photographer, and will be published in the forthcoming issue of the same magazine.

NOTES ON STAR PHOTOGRAPHY.

(*Continued from page* 346.)

The difference between the so-called "chemical" focus and the visual focus of a telescope may be little or it may be half an inch. In either case the photographed image will be decidedly out of focus if allowance for this difference be not very carefully made. The usual means of doing this is to change the position of the plate-holder, and find the place of the sharpest definition by trials. By properly arranging the ground-glass and the plate-holder, the plate will always be in focus for the actinic rays when the image appears sharp on the ground-glass.

Having accomplished this result, we have succeeded in doing precisely what we do not wish to do, viz., instead of arranging the instrument to photograph what the eye can see, by means of the extended and uniform sensitiveness of an orthochromatic plate, we have arranged it to define only with blue or violet rays, and have restricted its range to stars that are specially characterized by highly refrangible radiations, effectually cutting off the red and yellow stars, and rendering the use of orthochromatic plates not only useless but positively objectionable.

As regards the red and yellow stars, the greater portion of their light will be brought to a focus at the point of distinct vision, not on the sensitive plate; and the feeble radiations of higher refrangibility, being too weak to act strongly upon the plate, such stars will be but faintly shown in the negative. The rays not focused on the plate will tend to blur the images, and this effect will be more pronounced and objectionable in proportion as the range of sensitiveness of the plate to the different parts of the spectrum is increased. For this reason the most perfect pictures would be produced, under the conditions described, by using plates sensitive only to the particular rays that form the image on the plate, or else by cutting off the other rays by a screen, thus working with monochromatic light.

It is possible that there may be some object in photographing stars with the different colors of the spectrum separately, in which case orthochromatic plates can be so prepared that they will select the particular light required, and such observations may be made with ordinary telescopes, correcting them for each set of rays in turn, in the manner described. But if I correctly understand the purpose of photographic star-maps, they are intended not only to represent the distribution of stars and their relative positions, but also to show their respective brightness, or, as we usually call it, magnitudes. Now magnitude measured by brightness is not the same as the photographic action of the stars upon a plate of restricted spectrum sensitiveness, such as all ordinary sensitive plates, and this, although a self-evident proposition, has not received in practice the attention it deserves. On the other hand, orthochromatic plates will give perfectly truthful representations of the starry heavens when used with perfectly corrected telescopes, as already explained, and that they will only do so under such conditions is, I believe, obvious.

If it is possible to make plates of uniform sensitiveness as regards tests in the sensitometer, and also as regards all the rays of the visible spectrum, and if such plates can be produced regularly in large quantities, we may consider the problem of photographing the stars to be satisfactorily solved. But much yet remains to be done before a plate that can be regarded as standard can be adopted. The composition of the emulsion, the manner of rendering it sensitive, the means of testing the plates, including the standard of light to be used in the process, and the keeping qualities of the plates, must all be thoroughly investigated before it will be safe to adopt a standard plate for universal use. Nevertheless, we are in a position now to begin practical work, and the results will be of permanent value if we act upon the proposition that with orthochromatic plates there is no distinction of chemical and visual rays, and that such plates can only be advantageously employed when all the rays from red to ultra-violet are brought to a focus in a single plane.

I do not venture upon any speculations as to the probably best method of preparing color-sensitive plates for astronomical work, for the reason that new methods are constantly being tried. I will say, however, that I deem it not at all improbable that collodion will be found superior to gelatine as a vehicle for the emulsion, and although the gelatine plates are at present more rapid than collodion emulsion plates, there is no obvious reason for this, further than that we not yet know how to make extremely rapid plates with collodion. But there are some objections to gelatine and none to collodion. Gelatine swells in water, particularly in warm climates, and, although this defect can be to some extent controlled, it is really at times a serious trouble, which no "tropical" plates can entirely overcome without a sacrifice of other good qualities.

The great point in favor of collodion is that it seems to lend itself peculiarly well to the production of color-sensitive plates, and this, coupled with the uniformity of the material that can by proper means be secured and the clearness with which it works, leads me to anticipate that it will eventually rival gelatine for fine, delicate work, and I believe it will come to be highly favored in astronomical work and spectrographic work.—ROMYN HITCHCOCK, *in Science*.

Washington, D. C., June 10.

EXCURSION OF THE NEW ENGLAND CAMERA CLUBS.

(*Continued from page* 348 *and concluded.*)

After having enjoyed this exchange of pictures the last three years, there has grown up a certain "acquaintance on slides," as it were, which we hope will be more fully cultivated. We have become quite familiar with the names of the prominent slide-makers in each of the clubs, and as it promises more each year, we sincerely trust that "The New England Lantern-Slide Exchange" may continue its successful career, maintaining its present good record with enlarged membership, and increasing interest in its enjoyable and instructive purpose.

The finances of the Exchange show a balance of $8.53 on hand.

Mr. Drew moved the report be accepted, and also nominated the Providence Camera Club for Secretary, for the ensuing year, and it was so voted.

A vote of thanks was extended the Providence Club for services as Secretary during the past season.

Mr. Nelson remarked upon the matter of descriptive text to accompany the slides, urging the members to see that the pictures are at least described. It need not assume the proportions of an illustrated lecture, but much information could be imparted and the exhibition of the pictures made so much more entertaining.

Interchange of prints was brought up by a report from a committee of the Providence Club, and after considerable discussion it was left to the Secretary to send out circulars and ascertain if each club felt that it would be practical.

The circuit of the slides for the coming season was taken up, and the following itinerary decided upon.

Providence to Pawtucket, to Boston, to Mattapan, Medford, to Lowell, to Lynn, to Portland, to Springfield, to Hartford, to New Britain, to Waterbury, to New Haven, to Providence.

The rules in force the last season, with the amendment in Section 1, were considered sufficient.

The dues for the coming year were voted at $2.

After more informal discussion of the different matters concerning the Interchange the meeting adjourned.

Providence Camera Club,
Secretary.

[Signed] *Clinton R. Fuller, President.*

The Editorial Table.

"The Adirondacks" and "Saratoga," the annual guide books written and illustrated by S. R. Stoddard, of Glen Falls, N. Y., and published by the author, have again made their appearance.

The volume devoted to Saratoga, also contains a guide to Lake George and Lake Champlain.

Both books are in their 22d edition, and are indispensable hand-books to the tourists.

On Cramer's Isochromatic Plates.—We have received from the Cramer Dry-Plate Works two magnificent photographs by Strauss of St. Louis, made from negatives on Cramer's Isochromatic Plates. Both subjects are taken from the "Liliputians in Candy," and are copyrighted by Rosenfeld Bros. They are worth having.

The Writings and Speeches of Grover Cleveland. Selected and Edited, with an Indroduction, by Geo. F. Parker. New York: Cassell Publishing Company.

This compilation of Ex-President Cleveland's Writings and Speeches is a particularly "timely" book, in view of his recent nomination for the Presidency.

The collection has been made with Mr. Cleveland's consent and co-operation. It gives, under a fair classification, his opinion on all topics upon which he has spoken, and from it the readers will be able to form a complete estimate of his charactor as it is shown in his public utterances.

The matter has been classified under twenty-five chapter headings and everything is indicated so plainly in the index that no reader will have any trouble in tracing what Mr. Cleveland has said on any topic.

The book is neatly bound in olive cloth, with gilt titling. The price is $2.50. An Edition de Luxe, on large paper, limited to 200 numbered copies, bound in half leather, with gilt top, is sold at $6 per copy.

Portraiture by Artificial Light.—In Dr. A. Miethe's publication, the *Wochenblatt*, there are some notes on artificial light in portraiture which may afford useful suggestions. It is pointed out that the magnesium flash-light may, if flashed out suddenly from darkness, show the pupils as quite unnaturally expanded, the resulting portrait consequently having a ghost-like expression. It is also said that much of the value of the magnesium flash-light to the photographer consists in its use as an auxiliary to other light. For example, a sitter may be placed near the window in an ordinary room so that the window light shines almost from the back. The flash-light is now burned inside the room, and after the daylight has been allowed to act for a convenient time. In such a case, the lens should be covered as soon as the flash has taken place, as the sitter is likely to move, or, at any rate, to close the eyes, under the influence of the flash. In ordinary cases, the magnesium light will be the principal light, and the window light the secondary. It is mentioned that, by operating with combined lights in this way, Herr Oxtmann, of Plauen, has obtained some admirable groups. In a similar way the magnesium flash may be used in connection with the arc electric light. Finally, it is asserted that the lime-light may be also used with advantage in a similar way, in conjunction with magnesium.

Lighting the Sitter from Behind.—Herr C. Grebe has been writing in the *Photographische Mitteilungen* in plea for lighting from behind, in spite of the old canon against allowing the light to stream directly towards the lens. Herr Grebe does more than write, he shows many charming pictures in defence of his position, among which is a photograph of a woman sitting in a balcony with the sun shining on her through the window opening down to the ground. The camera was placed in the room, and altogether the effect is peculiarly charming. The play of the light on some flowers just inside the window is such as to make those who see the photograph wish to follow Herr Grebe in running contrary to the old traditions of the photographic portraitist.

On account of destruction by fire, October 28th, of adjoining building, and damage to our own premises, we were compelled to move into temporary quarters.

We are now pleased to inform our customers and the trade in general that we are back at the "old stand," 521 Fourth Avenue, in the new building, just finished. Our stock is now very large, and complete in every department, and consists of all the new and desirable goods the market affords. We beg to thank our many friends who have stood by us in our trouble, and can now promise prompt and accurate attention to any orders with which we may be favored.

J. V. ESCOTT & SONS.

SNAP SHOTS.

THE AMATEUR PHOTOGRAPHER.

Low cunning seems to be his aim,
He fills your breast with cares;
For when he works his little game,
He takes you unawares.

Your first picture is seldom what you took it for.

The kodak fiend not only takes a poor view of life, but he puts a bad face on everything.

The summer girl poses while the amateur photographer proposes.

When an irate man catches you taking a snap shot at him it is no use for you to hold up your camera and say you didn't know it was loaded.

The prominent man has little rest from the fiends. Wherever he goes "They're after him, after him."

The amateur photographer has much to be accountable for. He is the cause of many a pretty girl not knowing herself.

There is nothing like a camera to increase a man's love. The fiend is always picturing his girl to himself.

Like the burglar, he finishes his work in the dark.

The summer girl has a good time with the amateur photographer, because he is always taking her somewhere.

Your wife looks upon photography as an innocent amusement until you convert the lavatory into a dark-room.

The man with the camera is the real snapper-up of unconsidered trifles.

The female fiend wouldn't make a good summer girl, because she would never give a negative.

Whatever his opinions may be, we can seldom commend the views of the amateur photographer.

THE SUMMER GIRL.

Although you find her full of grace,
And charms none can withstand,
Don't think because you take her face
That you can take her hand.

—*The N. Y. World.*

Queries and Answers.

292 C. C. S.—(1) I wish to print "Souvenir Albums" of views similar or superior to "Wittman's" or "Fay's."

(2) Can I make a suitable lens for "copying" from photographs, probably averaging 6 x 8 to 4 x 6 inches, reduced to 2½ x 4, the size I intend to use?

(3) Best adoption of opera glass lenses in 1¼ inch convex (achromatic) ½ inch (non-achromatic), two of each, for camera lens, to use for copying photograph probably averaging 4 x 6 inches or larger, for making negatives, size 2½ x 4 inches.

(4) Which process would you advise for "albumen printing"?

(5) Can find no instructions for applying the varnish to hecto-printing—in quantity by machine. Shall I use a soft roller or brushes?

(6) How can I obtain the use of negatives of such pictures as Presidential candidates, ocean steamers, trotting horses, base ball players, and the like?

(7) I wish to make the portraits of the players the prominent features of a new *score-card* we are printing. How can this be done?

(8) Could the telo-photo lens be used? Could I give clear faces if men are shown in position, or best to have separate portraits of heads and shoulders, say ¾ x 1 inch.

292 *Answer.*—(1) The Wittman pictures are albertypes, or so-called phototypes, and printed from a gelatine cliché upon the lithographic press. We do not know the "Fay's."

(2 and 3) We do not advise to photograph with any improvised objective. Lenses are now extremely cheap, they are made in great variety, and to suit any particular purpose. Scovill & Adam's Co. catalogue will tell you of several just such as you will want, for example, the Swift Paragon, the Scovill Instantané, the Steinheil, etc.

(4) Use Three Crown extra brilliant albumen paper and the sensitizing bath and toning solution recommended by the manufacturers of the paper.

(5) We should say with brushes.

(6) Advertise or look about in the many stores of dealers in photographic pictures.

(7) Procure single portraits of each individual person, and reduce them to the size wanted. Were you to attempt to copy single portraits from groups, the work of removing portions of other and surrounding objects, and introducing chemical backgrounds, would be very tedious, unless you prefer to leave a perfectly white background.

(8) The telo-photo objective is not suitable for that class of work; it works too slow to photograph a lot of ball players in action. Resort to the copying of pictures already existing.

293 FREDRIC ROHR has had a sample of Aristo paper imported from Copenhagen, Denmark. It prints and tones very nicely, but after squeegeeing it, either on ferro plates, glass or ebonite, the picture will stick, and does not come off like our American Aristo paper.

293 *Answer.*—The paper spoken of is in all probability coated with celluodine emulsion, which does not permit of squeegeeing. The pictures made upon this paper should be mounted after all hypo has been eliminated from them, and when still damp. The high gloss is then produced by hot burnishing.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

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Sixth.—Because it is the best edited and best printed photographic magazine published anywhere in the world.

Seventh.—Because you reach a class of buyers in it, not obtained through any other medium.

Eighth.—Because it is not read and then thrown away, but is preserved and bound, on account of its beautiful illustrations and original information.

Ninth.—Because it contains every week more original information prepared especially for its columns than any other photographic magazine.

Tenth.—Because its circulation is not local or limited, as it extends throughout the entire United States, and goes to both professionals and amateurs.

Eleventh.—Because it circulates not only in this country, but also in Europe and on the Continent.

Twelfth.—Because its pages are double the ordinary quarto size.

Thirteenth.—Because its rates are lower than any photographic publication, considering the size of page and the extent of circulation.

Fourteenth.—Because your advertisement will receive the best of treatment on the part of the compositor, and will be advantageously placed in its pages.

Fifteenth.—Because all its advertisers are endorsed by the publishers as being worthy of patronage.

Sixteenth.—Because no advertisement in any way objectionable is admitted to its pages.

Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

"**The Henry Clay** is working splendidly," writes Prof. W. Jerome Harrison, Birmingham, Eng.

Business Notices.

IMPORTANT TO PHOTOGRAPHERS.

SCHOOL OF PHOTO-CERAMICS OR BURNT-IN PHOTOGRAPHY.

In order to make the art of Burnt-in Photography popular, we have concluded to accede to the desire of the fraternity and give instruction in the new art, to **ONE person only in each city and town.**

The instruction will include Burnt-in Photographs on China, Porcelain, Gold, Silver, Watch-cases, Dials, etc. The business in Watch-cases alone pays well, it being the most fashionable "fad" of the day.

The process is easy to learn by any good practical photographic printer. Like many other processes it **must be shown**; it cannot be described on paper and rendered practical.

The price will be moderate and according to the size of the town. The instruction will be continued through the summer months only. Address,

F. B. FORSTER,
Manager of the Rockwood Photo-Ceramic Co.,
1440 Broadway (40th St.), New York.

FOR SALE.—One of the oldest and best equipped galleries in the city of Denver, Col.; centrally located, and good prices. Newly refitted up to 18 x 22. Good reasons for selling. Correspondence solicited. Address "PHOTOGRAPHER," care PHOTOGRAPHIC TIMES.

FOR SALE.—A new Dallmeyer 4 x 5 Rapid Rectilinear Lens, $25. List price $37. Address W. F. RANDALL, 288½ Stuyvesant Ave., Brooklyn.

FOR SALE.—A new 4¼ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
Care THE PHOTOGRAPHIC TIMES Office.

RAPID RECTILINEAR LENSES AT COST.—4 x 5, $5; 5x7, $12; 5x8, $7; 6½x8½, $8; 8x10, $12; 10x12, $18; 11x14, $24. Write for price list.
W. P. BUCHANAN, Importer, Philadelphia.

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C. M. DARLING, 122 West 36th St.

FOR SALE.—I will sell my Safety Bicycle, which cost over $100, for $50 cash. It is in excellent condition. Address W. B., care PHOTOGRAPHIC TIMES Office.

LANGILL. 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

WANTED.—No. 416, September 6, 1889, issue of THE PHOTOGRAPHIC TIMES. Will pay fifty cents for this copy if in good condition.
A. L. PHILLIPS, Jamestown, N. Y.

LANTERN-SLIDES AND HOW TO MAKE THEM, by A. R. DRESSER.—A new book, very complete and thoroughly practical. Only 25 cents. Sent postpaid on receipt of price by THE SCOVILL & ADAMS CO.

FOR SALE.—Gallery well fitted up; good location in town; must sell quick; all complete, $350; a mine for some one; rent only $16, worth $30 per month.
F. C. BLATTER, 124 W. 12th St., Chicago,

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R. H. MORAN,
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A RARE BARGAIN.—A 4 x 5 Waterbury Detective Camera, with two holders, in good condition. Will sell for $16. F. N. LORD,
Box 2304 N. Y. City.

FOR SALE.—A Beatty Parlor Cabinet Organ, catalogued at $300, which I recently drew as a prize. This Organ is in perfect condition ; but, as I have no use for it, I will sell it for $100 cash. Address E. R. C.,
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S. P. C. EIKOQUINOL DEVELOPER.—This "ne plus ultra" developer for timed and instantaneous exposures, lantern slides and all other kinds of transparencies, photo-mechanical work and bromide paper prints is now in stock and for sale at 35 cents per bottle of 8 ounces. No other developer is now used by the members of Chautauqua School of Photography ; no other has attained to equally fine results.
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Photographie par Emulsion Sensible. A. Chardon, Paris, 1880 10
American Annual, 1887, cloth 50
" " 1888, " 50
" " 1890, " 50
The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47..... 25
Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper..... 10

ODD NUMBERS AND VOLUMES OF PHOTOGRAPHIC JOURNALS.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

THE PHOTOGRAPHIC TIMES, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each ; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2 ; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English), Vols. I. and II. (except No. 18), 1890, 1891.

A few *very* odd numbers of Photographic Notes, Daguerreian Journal, Photographic and Fine Art Journal, Magic Lantern Journal, Photographic Herald, etc.

Employment Offered and Wanted.

SITUATIONS OFFERED.

A first-class operator and retoucher, also an expert printer and toner, can hear of a good situation by addressing D. H. Swartz, Fort Worth, Texas.

Partner wanted, with or without capital; will pay salary if preferred ; must be A No. 1 operator with a successful experience in large work, and a fine retoucher. Address with samples and terms to A. E. Hotchkiss, Norwich, N. Y.

SITUATIONS WANTED.

Lady wishes place in first-class gallery in New York City; first work done in any branch. Address, E. M. G., 548½ Hudson Street, New York City.

Photographic operator of refinement open for an engagement in studio, stock house or dry plate firm. Address 41 High St., Clinton, Mass.

Situation as operator by good man ; samples and references. "Photographer," No. 110 Wilder Building, Rochester, N. Y.

Position by first-class head printer. Address "Printer," No. 16 State St., Rochhster, N. Y.

Would like to engage with some photographer at very small wages at first ; understand operating and albumen printing ; also a very good retoucher ; will be out of employment the first of July; samples sent on application. Address, B. W. Taylor, Photographer, Rocky Mount Franklin County, Va.

An operator of high repute, for all branches of studio and out-door work, will be pleased to treat with firm of good standing. Address in first instance for all particulars to the Editor of this magazine.

A young man twenty-two years' of ago, capable of operating, retouching and printing, desires a steady position at once ; would like to run a small gallery on shares; experience of seven years. Eugene Schnepf, Philipsburg, Centre Co., Pa.

By a young lady a position as retoucher and assistant, near Boston. Correspondence solicited. Address E. J. T., 146 Princeton St., E. Boston, Mass.

A first-class operator, well versed in all branches of photography, is open for an engagement ; process work, zinc and copper etching a specialty ; best of references. Address Max Lau, 905 Park Ave., Hoboken, N. J.

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Sole Agents, Philadelphia, Pa.

BLUE PAPER.

A *good* article in this line is always hard to find. The *package* paper is variable and not to be relied upon. The motive of this little "Ad." is to tell you of our *special* Blue Paper. It is made fresh every day, on imported paper; is 50 per cent. cheaper than other papers, and withal is the best. Per yard (27 inches wide), cut to any size, 25c. Send 5c. for sample. THE OBRIG CAMERA CO.,
163 Broadway, New York.

BECK'S NEW SERIES "B" LENSES.

"Rapid Rectilinear," "Mid-Angle" and "Wide Angle" have all the wonderful properties of the well-known Series A, at prices as low as those of common lenses.

WILLIAMS, BROWN & EARLE,
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WE HAVE THEM!! $6.00 TO $25.00.

They can be loaded in the *daylight*, and we give full and careful personal instructions gratis. We develop, print and mount in albums at Eastman's prices. Only *first-class* work turned out. THE OBRIG CAMERA CO.
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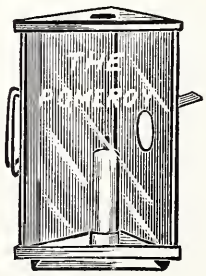
PRACTICAL INSTRUCTIONS IN

PHOTO-ENGRAVING.

OUTFITS FURNISHED.

Manufacturer of FINE SCREEN PLATES for HALF-TONE ENGRAVING.

W. E. BOWMAN, Ottawa, Ill.



HAS RUBY GLASS.
Size, 6½ x 4¼ Inches.

We would respectfully call your attention to

"THE POMEROY Dark Room Lamp,"

which has taken a front rank as a Lamp of this kind

1st —Because it has perfect ventilation.

2d.—Because being triangular in form it can be folded without complication, and occupies a space not greater than Webster's Pocket Dictionary, 6½ x 4¼ inches.

3d.—Because it has a socket to take candles, which may be procured in any part of the country; the annoyance of loading one's self with a supply is avoided.

4th.—Because there are no small chimneys to be broken or cleaned, nor adjusting of wicks.

5th.—Because it stands more firmly than all others, and is of the proper size, and gives proper light.

6th.—Because it has folding handles and may be carried without burning one's fingers.

7th.—Because the flame is so readily controlled, having light-tight slide at side.

8th.—Because it comes all complete in a pasteboard box, less candle, for 75 cents, and can be mailed to any part of the United States for 10 cents postage extra.

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Is a conundrum for ordinary Blue Print Paper.

FRENCH SATIN JUNIOR, THE NEW BLUE PRINT PAPER

has the unusual property of extracting all there is in the negative. By a peculiar feature of its manufacture it possesses qualities entirely new to BLUE PRINT PAPERS, and gives prints equal in richness and detail to silver paper.

THIS PAPER KEEPS PERFECTLY FRESH FOR MONTHS.

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The term of the local class 1891-92 closes on Saturday, April 30th.

The practising class will open on the Assembly Grounds on or before July 1st, and will remain in session till the first week in September.

Subjects of Instruction.—The modern gelatine processes in all their bearings, mainly orthochromatic methods by timed and instantaneous exposures.

Daily practice in studio, field and laboratory.

Printing Methods. — Albumen, Matt-Surface Paper, Chloride of Silver, Gelatine and Collodion, Bromide of Silver and Kallitype paper.

Especial attention will be paid to the making of lantern slides.

TUITION FEES.

For one course of ten lessons	$5 00
For one-half course of five lessons	3 00
Special lessons	1 00

Independent of photographic materials and books.

Advanced students will please to bring with them Camera, Lens, Plate-holders and Tripods. Utensils are furnished by the school.

Beginners may work with the apparatus of the school, without extra charge.

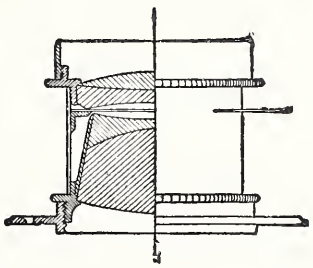
The Corresponding Class may be joined at any time.

For particulars apply to

PROF. CHAS. EHRMANN,
423 Broome St., New York.

And after June 24th,
CHAUTAUQUA ASSEMBLY GROUNDS, N. Y.

THE UNRIVALED STEINHEIL LENSES.

SERIES  II.

The best and most rapid lens for general work for both professional and amateur photographers. Remarkable for its powerful and even illumination and sharpness.

Series III. The prototype of all rapid symmetrical and rectilinear combinations. Guaranteed equal to the most expensive lenses of its kind.

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423 BROOME STREET,
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$1.00 A DOZEN

For Cabinets is not profitable to any Photographer, yet how many will persist in trying to compete with his neighbor, forgetting that quality not quantity pays best.

THE PHOTO-AMERICAN 12 TIMES A YEAR

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Mail us 75 CENTS and we will send you by return post our No. 2 FLASH LAMP with magnesium, bulb and tubing all ready for use.

$1.50 WILL, in the same manner, purchase our No. 1 Lamp. The only satisfactory Flash-light apparatus in existence.

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Successors to

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Office and Salesrooms:
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WHEN BUYING Photographic Cameras, be sure if you would have the best, that they are made by the AMERICAN OPTICAL COMPANY, New York, and are stamped on the front board for lens and frame for ground glass—"American Optical Co., New York.

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BLUE PAPER, AND

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BOTH NEW.

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REFERENCES IN NEW YORK, THE SCOVILL & ADAMS CO.

FRANCAIS LENSES,

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ASK TO SEE

THE RUDELL CAMERA.

SOMETHING NEW.

CARBUTT'S ORTHOCHROMATIC
PLATES AND CELLULOID FILMS

Still Ahead: Read what is said of **this Season's Work.**

MONON ROUTE.

W. H. McDOEL, Gen. Manager.
JAMES BARKER, Gen. Pass. Agent.

PASSENGER DEPARTMENT,
MONON BLOCK,
CHICAGO, April 7, 1892.

JOHN CARBUTT, ESQ.,
WAYNE JUNCTION, PHILADELPHIA.

MY DEAR SIR:—I have just returned from a long trip to the South, visiting the principal points of interest in Florida, and taking a run to Cuba. I took with me your **ORTHOCHROMATIC FILMS**, and had most wonderful success in getting views of noted spots. To say I am delighted but half expresses it. My trip took a month; making most of the journey in a private car I was enabled to rush round from spot to spot in a way which would not have been convenient under other circumstances, and, indeed, at the time being I hardly realized what I was doing, but now I am home making prints at spare moments; I am enjoying the trip over again, rendered possible by the camera.

Very truly, JAMES BARKER.

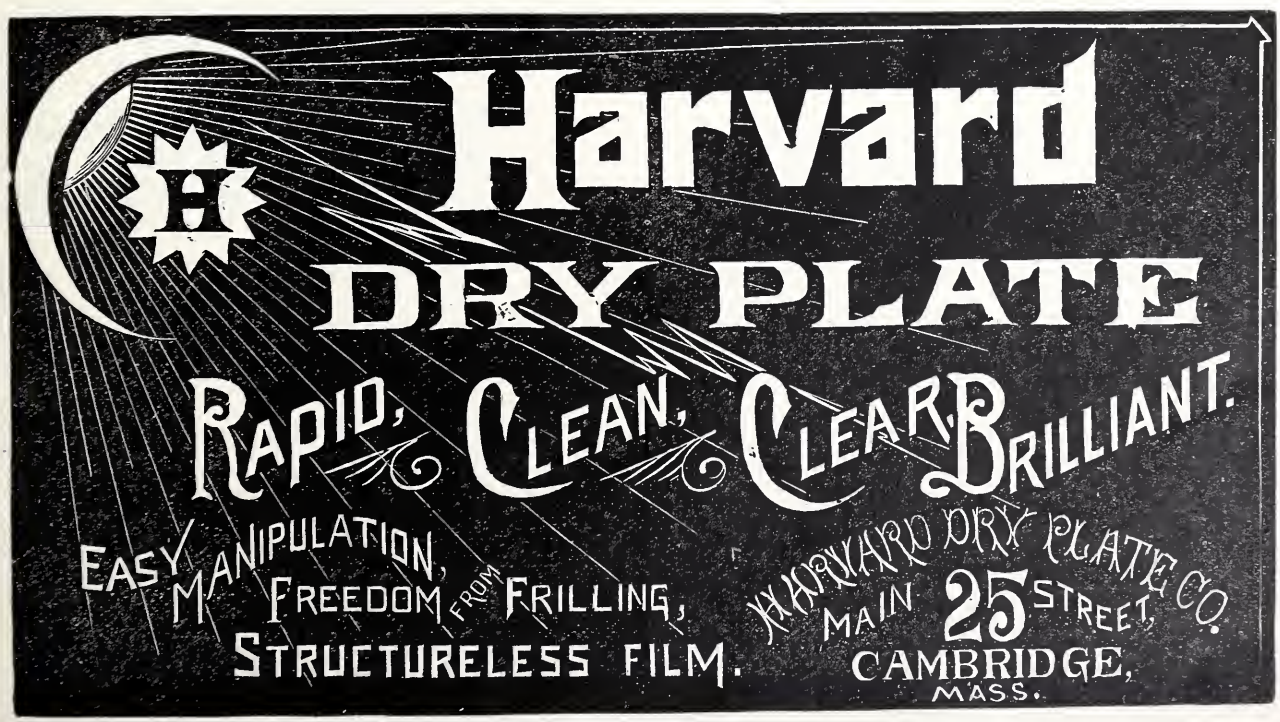
All contemplating a summer tour should place their orders with dealers early, to avoid the season's rush. Carbutt's Dry Plates and Flexible Films are to be obtained from all dealers in photo materials. Send to factory for reduced Price List and list of brands.

Manufactured by JOHN CARBUTT,

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KEYSTONE DRY PLATE AND FILM WORKS.

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OLD ESTABLISHED

DEPOT and STOCK HOUSE,

PHOTOGRAPHIC MATERIALS AND SUPPLIES

OF ALL KINDS FOR

Professional and Amateur Photographers.

PROMPT ATTENTION GIVEN ALL ORDERS.

LOWEST PRICES, BEST GOODS.

Cameras, Amateur Outfits, Dry-Plates, Card Stock and Chemicals

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RAPID UNIVERSAL LENSES,

for Group work in Studios and all outdoor work, and

ALVAN G. CLARK LENSES,

on both of which there has been a decided reduction in prices. The New and Wonderful

ZEISS-ANASTIGMAT LENSES,

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which stands without rival.

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Send for NEW CATALOGUE, Just out.

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Transparency Plates.

For LANTERN SLIDES, Window Transparencies, and Reproductions in Black-and-White.

These Plates make the most perfect Lantern Slides, either by contact printing by artificial light or by means of the camera from larger or smaller negatives and give, at will, either engraving black or rich warm purple tones; they are also specially suitable for reproductions of line subjects for photo-lithography, when used for this purpose with our improved Pyro Transparency Developer, they give any desired density with perfectly bare glass in the high lights.

Price, 3¼x3¼ (English Lantern Size), 75 cts. per doz.

Edwards's Special
Pyro Transparency Developer.

For Lantern Slides and Transparencies.

By means of this new Developer the most perfect Transparencies can be obtained on suitable Dry Plates with the greatest facility. It is the only Developer yet discovered which will produce (on Rapid Gelatine Plates) Lantern Slides of the highest class with RICH WARM TONES and perfectly clear glass in the highest lights.

Price, Two 8-oz. Bottles in Case, $1.50.

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CHAS. COOPER & CO.,

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MANUFACTURING

CHEMISTS

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REFINERS

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WORKS AT

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ESTABLISHED 1865.

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WILSON-HOOD-CHEYNEY COMP'Y,

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Photographic Supplies,

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"STEAMER BRAND" PAPER.

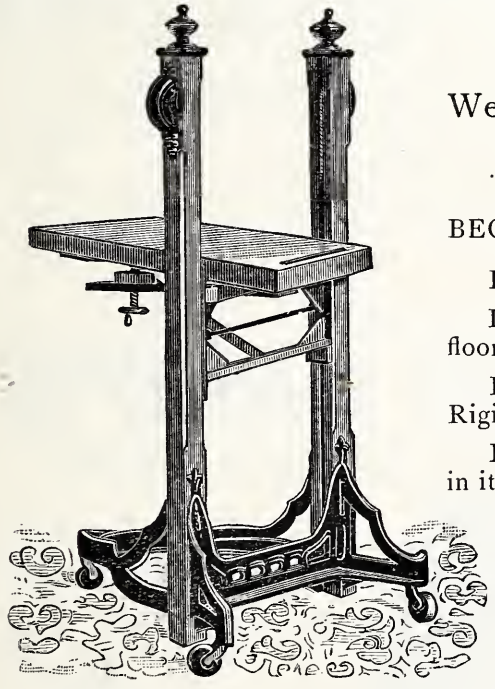
Hermagis, Berthist and Goerz Lenzes.
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Cameras for Field, Gallery and Hand.
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GEORGE MURPHY, Manufacturer, Importer and Dealer,
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You want a New Camera Stand?



New England Agents for American Optical Co.'s Apparatus. Best in the world.
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WHY NOT GET THE BEST?

We claim that **The Semi-Centennial Camera Stand**

BECAUSE— **IS THE BEST.**

It is simple in construction and will not get out of order.

It will enable you to get your Camera within 13 inches of the floor, or as high as you wish from the floor.

It is fitted with turning casters, with rubber wheels. Strong, Rigid, Easy in Operation, and Ornamental in Appearance.

It is the invention of a practical photographer and is perfected in its details. WARRANTED PERFECT.

FOR SALE BY ALL DEALERS.

PRICE, Boxed, $25.00.

NEW ORTHO-PANACTINIC LENS.
H. R. & CO.'S ALBUMEN PAPER.

HORGAN, ROBEY & CO., Sole Agents,
34 Bromfield Street, BOSTON, MASS.

MORRISON WIDE-ANGLE VIEW LENSES.



These lenses are absolutely rectilinear; they embrace an angle of 100 degrees, and are the most rapid *wide-angle* lenses made.

No. of Lens.	Diameter	Size of Plate.	Equivalent Focus.	Price.	
0..1	inch...	3¼x4¼ inch...	2½ inch...	each, $20.00	
2..1	" ...	4 x 5 " ...	3½ " ...	" 25.00	
3..1	" ...	4½x 6½ " ...	4½ " ...	" 25.00	These 5 sizes will fit into 1 flange.
4..1	" ...	5 x 8 " ...	5½ " ...	" 25.00	
5..1	" ...	6½x 8½ " ...	6½ " ...	" 25.00	
6..1	" ...	8 x10 " ...	8 " ...	" 30.00	
7..1½	" ...	11x14 " ...	10½ " ...	" 40.00	These 2 sizes will fit into 1 flange.
8..1½	" ...	14x17 " ...	14 " ...	" 50.00	
9..1½	" ...	17x20 " ...	17 " ...	" 60.00	These 3 sizes will fit into 1 flange.
10..1½	" ...	20x24 " ...	22 " ...	" 80.00	
11..1½	" ...	25x30 " ...	28 " ...	" 100.00	

☞ Nos. 1 to 6 are all made in matched pairs for stereoscopic work. The shorter-focused lenses are especially adapted for street and other views in confined situations. For general purposes, a pair of No. 5 lenses will be found most useful.

FOR SALE BY ALL DEALERS.

A. M. Collins
Manufacturing Company

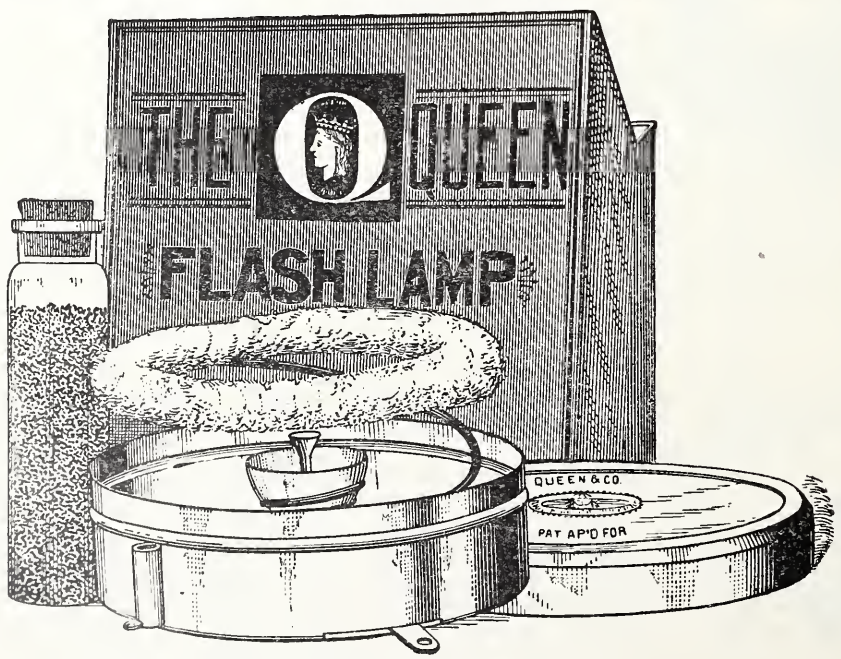
would call attention to Dealers in Photographic Supplies to their superior facilities for the manufacture and distribution of Photographic Cards, claiming that they have always in stock, or are prepared to make promptly to order, a greater variety and much larger quantity of Cards of superior quality than any other establishment in this or, perhaps, any other country.

Warehouse, No. 527 Arch Street,
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QUEEN'S FLASH LAMPS

THE ONLY ENTIRELY SATISFACTORY FLASH LIGHT APPARATUS IN EXISTENCE.

Mailed to any address upon receipt of $1.50.



$1.50

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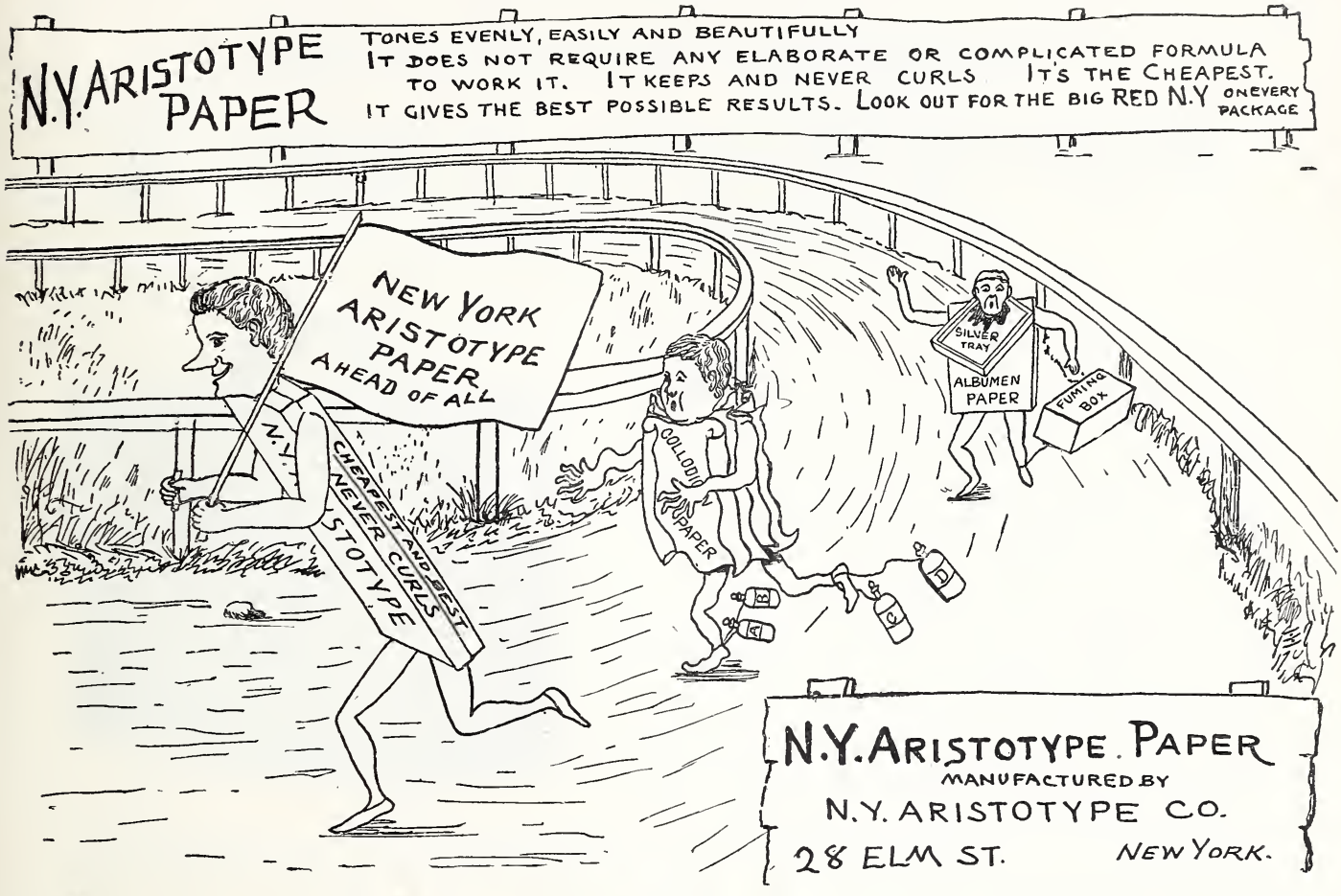
Depth 1¼ inches
Diameter 4 "
Weight 4 ounces.

Charge (small) 20 Gr., (costs about 1½ cents.)
" (large) 30 Gr., " 2 "

Size of room effectively lit when good lenses are used, about 25 x 30 ft.
Size of room effectively lit when cheap lenses are used, about 16 x 20 ft.

Time consumed in getting the lamp ready for discharge, 1½ minutes.

Jas. W. Queen & Co., Phila.



Perfected BP Bradfisch

ARISTOTYPE PAPER.

A PERFECT SUBSTITUTE FOR ALBUMEN PAPER.

This paper prints with negatives of **ordinary** density, and gives **rich** and **brilliant** results, with clear and prominent whites.

It does **not** stick, nor does the surface of the print rub off.

THE PERFECTED BRADFISCH TONING AND FIXING SOLUTION is recommended for use with Aristotype Paper.

It works perfectly and is always clear.

For Sale by all dealers in photographic materials, and by THE SCOVILL & ADAMS CO.

THE 5 x 7 HENRY CLAY
Stereoscopic Camera
FOR TRIPOD AND HAND USE.



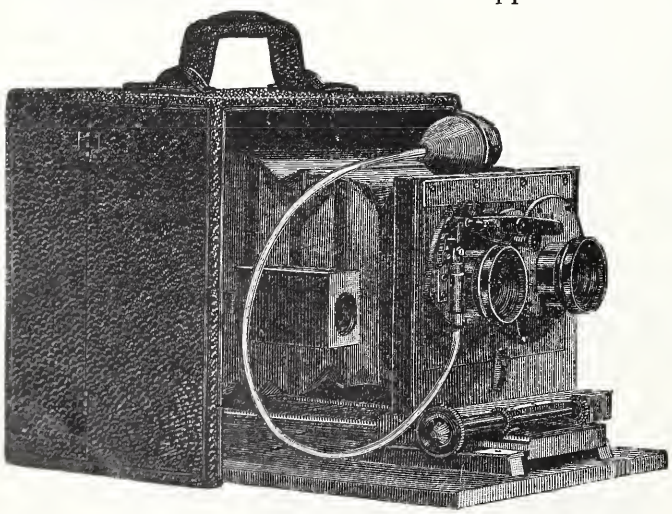
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

PRICE, with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, ... $75.00

This camera can also be made with vertical sliding and swing front. By means of the former the proportion of sky and foreground may be adjusted; the latter permits the taking of subjects which may be either above or below the level of the camera and still preserve the lines vertical.

PRICE, with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, and with vertical sliding and swing front, . $80.00

A 5x7 Roll Holder for Transparent Films can be furnished with either of the above forms of this camera for $15.00 additional. This addition would make the case about two inches wider and one-quarter inch higher.

THE SCOVILL & ADAMS CO., 423 Broome Street, New York.

"THE RATTLER."

$5 FRANK MCLAUGHLIN'S $5

New $5 Hand Camera

Is not a toy, as some may have supposed, on account of the remarkably low price at which it is sold, but a good, practical working instrument, one that we can recommend as being superior in every respect to any camera sold at double the price. It will make pictures 4 x 5 size, either snap-shot or on a tripod. More amusement and instruction can be had with one of these cameras this summer than will last you a life-time.

The Scovill & Adams Co.,

423 Broome St., NEW YORK.

Felt Backgrounds.

The Scovill & Adams' Plain Felt Background, recently introduced, is a great boon to all Photographers, both Professional and Amateur.

It is made of strong, thick and even stock, and is of an agreeable neutral drab color. It is especially suitable for vignetting. The texture of the cloth absorbs instead of reflecting light, and thus produces soft effects, and agreeable depth in print. The liability of defacement by water stains is obviated.

The prices of these grounds are as follows:

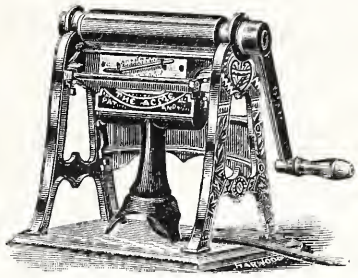
4 x 6 feet	$2.50
5 x 6 "	2.75
6 x 6 "	3.00
6 x 7 "	3.50
6 x 8 "	4.00

These sizes may be sent by mail on receipt of 35¢. extra.

For Sale by all Dealers in Photographic Goods,
OR BY

The Scovill & Adams Co.

423 Broome Street, New York City.



PATENT APPLIED FOR.

Acme Amateur Rotary Burnisher.

NOTE.

Quickest Heater in the world.
Saves seventy-five per cent. of gas, oil or alcohol.
No sweat, no smoke, no smell.
Acme Horizontal Thermometer attached.
No blistered prints, uniform results.
Will burnish an 8 x 10 and all sizes under.
Simplest Rotary Burnisher ever made.
One-hand wheel adjustment.
Full Nickel Finish.
Guaranteed in every particular.

PRICE, OIL, GAS, OR ALCOHOL, $15.00.

FOR SALE BY ALL DEALERS.

MANUFACTURED BY

ACME BURNISHER CO.,

FULTON, N. Y.

"The Developer of the Future."

S. P. C.

Para-Amidophenol Developer

IN ONE SOLUTION.

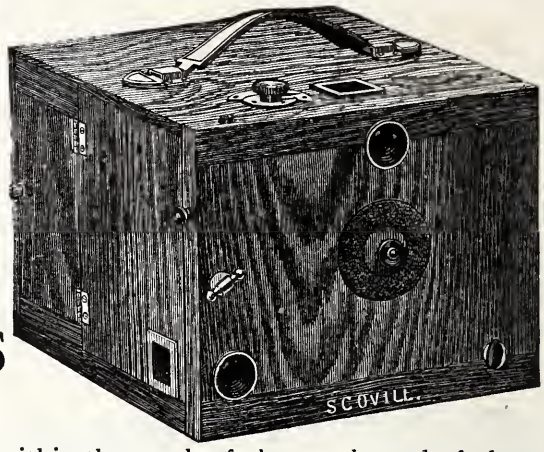
An eight (8) ounce bottle containing developer sufficient for developing 100 5 x 8 negatives.

PRICE, 50 CENTS.

For sale by all dealers in Photographic Materials
AND BY
THE SCOVILL & ADAMS CO.

IMPROVED KNACK KNACK

DETECTIVE CAMERAS



To MEET the demand for a cheap Detective Camera within the reach of the youth, and of those who want to make but a moderate investment in photographic appliances, we have introduced the KNACK CAMERA, which is certainly lighter and more compact than any other cheap detective camera in the market, and what is still more important, has a much more expensive and more perfect lens.

This Double Combination Instantaneous Lens, with Interchangeable Stops, when bought separately costs as much as the whole camera.

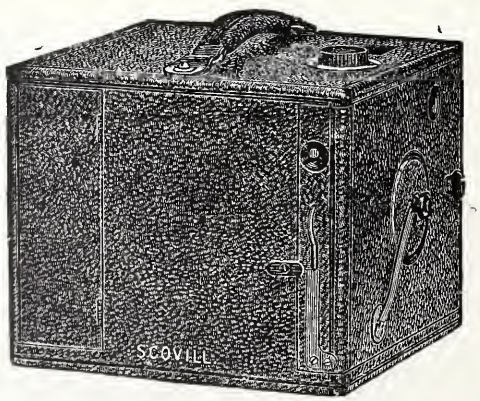
The whole front of this camera is hinged, which is a great convenience. The camera has a Recessed Finder, an Instantaneous and Time Shutter with Speed Regulator, Cap for timed exposures, and one Double Dry Plate Holder.

	PRICE.
No. 1 4x5 Antique Oak, Knack Camera,	**$15.00**
No. 2, " Leather Covered, " "	**17.50**

MANUFACTURED BY THE SCOVILL & ADAMS CO.

FOR SALE BY PHOTOGRAPHIC MERCHANTS.

THE WATERBURY DETECTIVE CAMERAS.



MANUFACTURED BY THE AMERICAN OPTICAL CO.

Timed and Instantaneous Photographs. This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size. It is

The only Detective Camera made for plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

The Recessed Finder shows *the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

The Focusing Scale is beside the Finder, where it may be readily seen and adjusted.

Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders	$25 00
5 x 7 Waterbury Detective Camera, with 2 Double Holders	40 00

FOR SALE BY ALL DEALERS.



Patented July 17, 1887.

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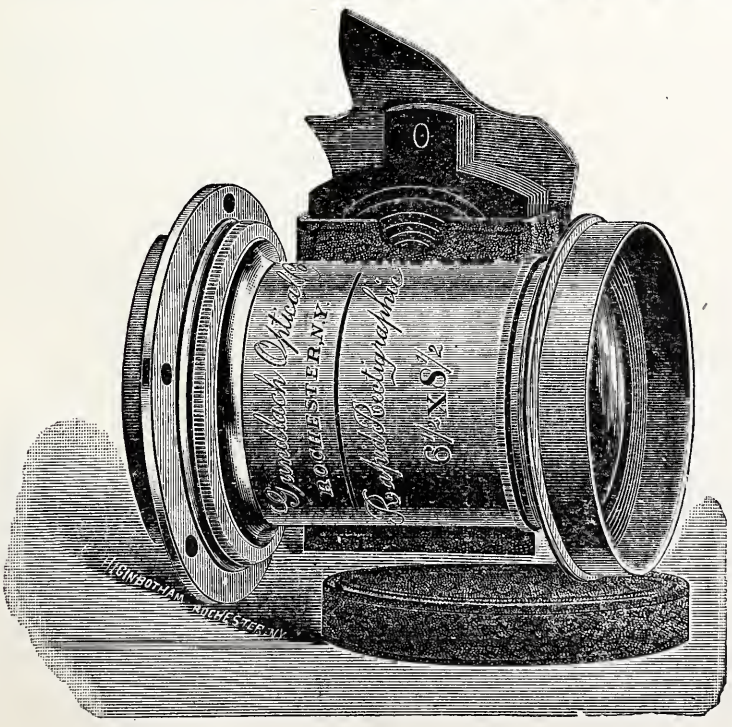
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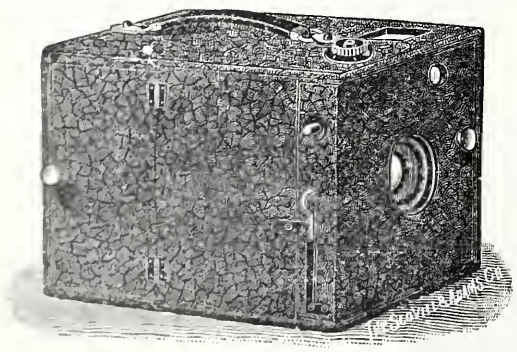
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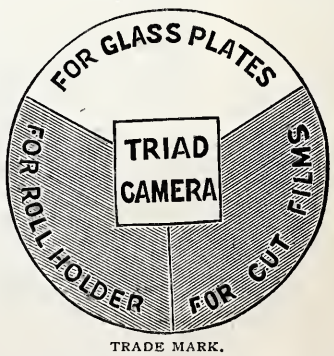
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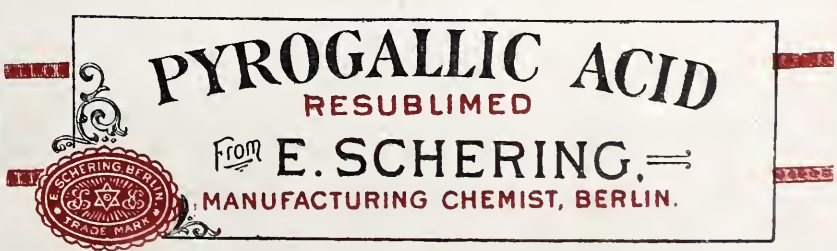
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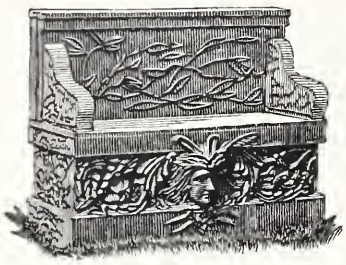
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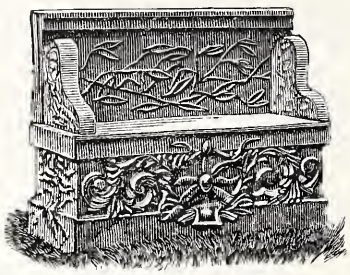
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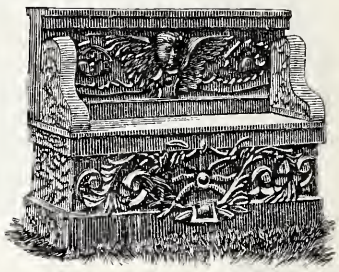
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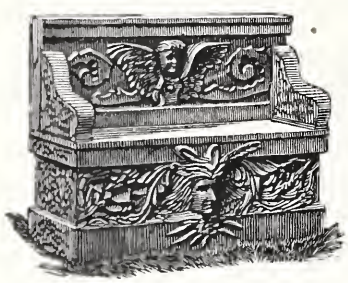
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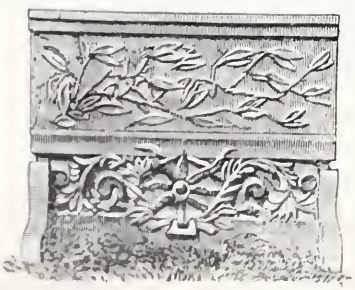
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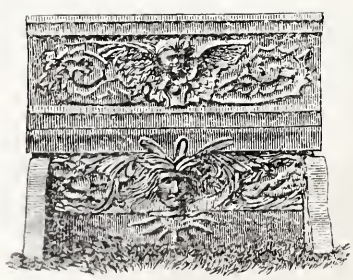
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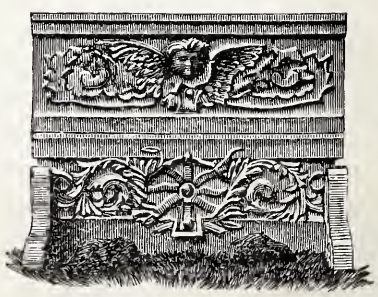
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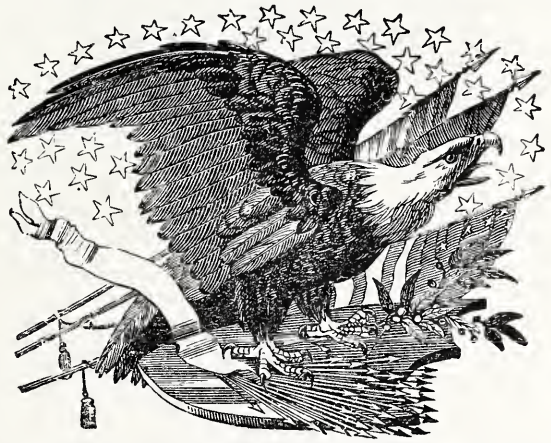
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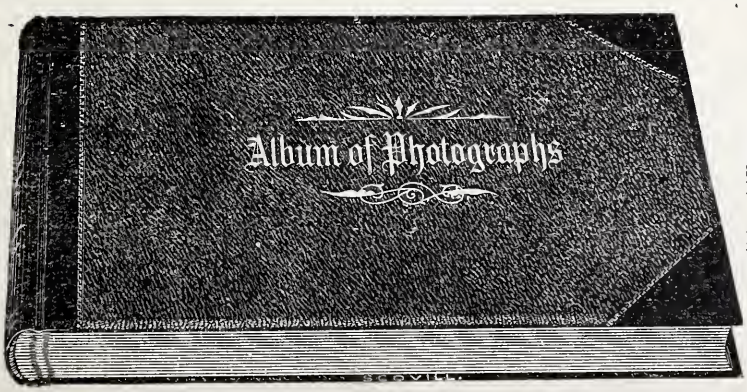
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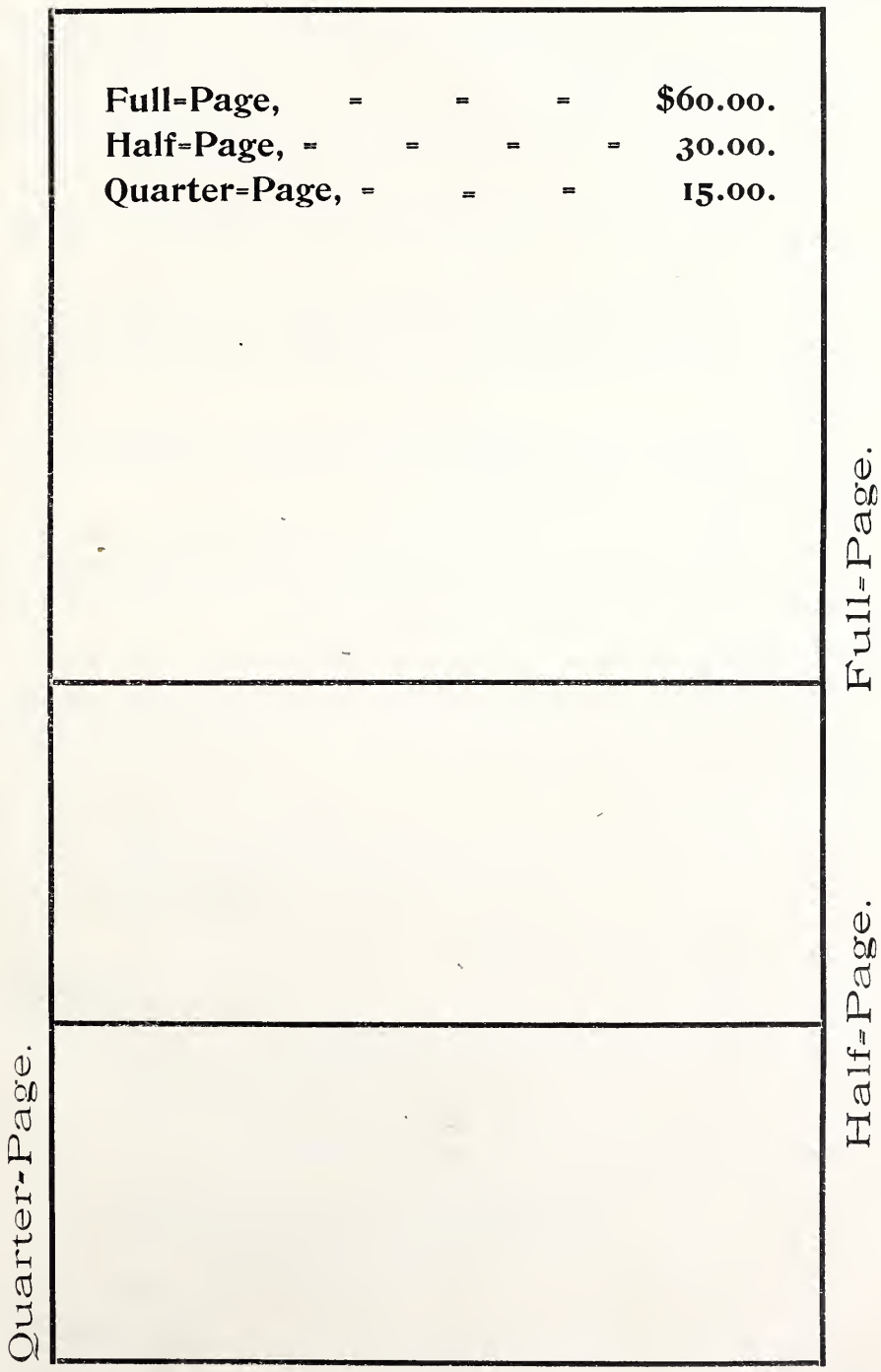
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PHOTOGRAPHIC TIMES (B)



MISS E. J. FARNSWORTH. PHOTO.

N.Y. PHOTOGRAPHIC CO.

Waiting

THE PHOTOGRAPHIC TIMES.

VOL. XXII. JULY 15, 1892. No. 565.

WAITING.

THE photo-gravure which embelishes this issue of the magazine is from the negative by Miss E. J. Farnsworth, a gifted lady amateur. The picture is rather an unusual one for a photographer, being an attempt to reproduce a light and shade effect, which is generally thought to be beyond the reach of the camera. The result, however, justifies the attempt, as the picture is certainly an effective one in its chiaro-oscuro. The lighting is so striking one is apt to overlook the exceedingly pleasing pose of the subject, and the arrangement of detail. It might be thought that painted back accessories are used in this picture, whereas the subject was posed in a room of an ordinary dwelling with only the usual side light to illuminate it. The ladies are showing themselves masters in this difficult branch of photograph work.

THIOSINNAMINE AND SULPHOCARBAMIDE.

THIOSINNAMINE and sulphocarbamide are employed to obtain the reversal of the photo-image, that is to develop a positive from a plate negatively impressed, or a negative from a plate impressed under a diapositive.

Colonel Waterhouse to whom we owe this useful process has thoroughly studied the chemical phenomenon, but cannot, however, give a true explanation of it. This should not surprise us. Do we know what is the nature of the latent image? Has light effected a chemical reduction or simply a physical change? And how does light act itself? We know from the experiments of the author of "The Correlation of the Physical Forces," that the moment a luminous pencil acts on a silver photo film it is transformed into other modes of motion, among which is electricity. Is the chemical or molecular change effected by this force? And as it also takes rise during the development, is this phenomenon the result of an electrolytic decomposition or that of the chemical affinity? All this belongs to the *causa verum* and is out of the reach of our investigations. To speculate upon them may lead to very interesting hypotheses, and perhaps to some discoveries, but it will teach us nothing about the origins.

The reversal process of Colonel Waterhouse is now employed abroad for various purposes.

We give in the following lines the chemistry of thiosinnamine and of sulphocarbamide, together with some formulas to employ them.

THIOSINNAMINE.

Thiosinnamine or allyl-sulphocarbamide, $C_4H_8N_2S$, forms incolorous prismatic crystals soluble in water, alcohol and ether, without action on test paper, and fusible at 158 deg. Fahr. Treated by the caustic alkalies it slowly evolves ammonia. It unites with hydrochloric, bromhydric, iodhydric, and other acids, forming salts, which does not crystallize. It is decomposed by metallic oxides with formation of metallic sulphides and a compound termed sinnamine.

The preparation of thiosinnamine is quite simple. It suffices to mix in a vial one volume of oil of mustard with four volumes of concentrated aqueous ammonia. In a few days crystals of the compound in question are deposited. For photographic use the crystals may be rapidly washed, then dissolved in very small quantity of hot water. The recrystallized compound is then sufficiently pure.

SULPHOCARBAMIDE

Sulphocarbamide or thiocarbamide, CH_4N_2S, occurs in prisms soluble in ten parts of water, in alcohol, and little soluble in alcohol. It dissolves the salts of the noble metals: silver, gold, and platinum.

It is prepared by heating ammonium sulphocyanate during two hours at 320 deg. Fahr.; the residue is dissolved in its weight of water at 175

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deg. Fahr., and the solution in cooling deposits the sulphocarbamide, which is afterwards purified by recrystallizations.

FORMULAS.

The exposure-time should be the same as for developing in the ordinary manner.

No bromide should be added to the developer.

The ammonia-pyrogallol developer gives very good results. About 15 drops of a saturated solution of thiosinnamine should be added to every ounce of the developing solution to obtain the reversal.

With hydroquinone the compound consists of

Hydroquinone	7
Sodium sulphite	15
Sodium carbonate	65
Thiosinnamine sat. sol	5
Water	480

Colonel Waterhouse gives the following formula for eikonogen and sulphocarbamide:

Eikonogen	1
Sodium sulphite	2
Borax	2
Sulphocarbamide sat. sol	20 to 25
Water	100

The image comes out as a negative at first, then the reversal occurs in beginning by the edges which blacken.

RAPID DEVELOPMENT.

"THE attainable degree of sensitiveness seems to be almost without limit by using large doses of alkali," once said Mr. Bouilland, and putting this into practice, he gives the following formulas and directions to develop with hydroquinone plates exposed instantaneously:

Sodium carbonate, pure	250
Sodium sulphite	60
Water	1000

When dissolved add

Hydroquinone	10

If the exposure has been short add to this solution from 30 to 50 per cent. of

Potassium carbonate, pure	500
Sodium sulphite	60
Water	1000
Hydroquinone	10

If the exposure has been very short, develop in the latter solution; the image appears instantaneously. Long development produces fog.

Dr. A. Lainer, of Vienna, also advocates rapid development, thus:

A.

Sodium sulphite, cryst	40
Potassium ferrocyanate	120
Hydroquinone	10
Water	1000

B.

Potassium hydrate	250
Water	1000

For use mix 10 volumes of A with from 1 to 2 volumes of B. The development is complete in from one to two minutes. The greater the proportion of alkali the softer the image and still more rapid the development, but the plate is liable to fog unless the action be restrained by the addition of potassium bromide.

Dr. Lainer gives another formula for a rapid developer:

Sodium sulphite, cryst	30
Potassium ferrocyanate	90
Hydroquinone	10
Water	1000

For use mix 6 volumes of this with 1 volume of a 1 : 2 solution of potassium hydrate. The picture is developed in two minutes.

The authority of Mr. Bouilland and that of Dr. Lainer are a guarantee that instantanés can be well developed by the formulas they give. We question, however, whether this rapid and sort of brutal manner of forcing the development of the image always leads to obtain satisfactory results. And, is that the only intervention of the photographer in the process to expose the plate, then to treat it with a certain developer without directing its action? Should he not endeavor to correct the photographically bad coloration or lighting of the model in order to soften the effect or increase the contrasts, or to avoid the solarization of the lights and still obtain the details in the shadows? Now all this is possible, not by a rapid uncontrollable development, but by a slow one, utilizing the opposite properties of the components of the developing solution, and, above all, by selecting a reducing agent of great solubility which insures a certain elasticity of action by varying the doses.

PHOTOGRAPHY ABROAD.

DIRECT COUNTERTYPE.

The most certain, expeditious, and least expensive process to obtain a reversed cliché, is to make a countertype by contact, provided the plates be sufficiently plane to insure a perfect contact by a slight pressure.

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Prepare a solution of

Water	1000
Potassium bichromate	10
Ammonium bichromate	5

Filter.

In this solution immerse during two minutes an ordinary gelatino-bromide plate, avoiding air-bubbles, then let it dry spontaneously in a dark place sheltered from dust. When dry expose it under the negative in full daylight for a period varying with the opacity of the negative, which may extend from five to twenty minutes, until the details are quite visible. This done, place the impressed plate face downwards on a black cloth and again expose to light but for hardly one minute; now develop in the dark-room with ferrous oxalate until the image commences to appear, when the development should be continued in full daylight. At first the image comes out as a positive, then it gradually appears as a negative. Push the development to obtain perfect details in the shadows, then wash the plate well under the tap, fix, etc.

The negative can also be fixed with a solution of potassium cyanide at 3 per cent. of water.

E. le Deley, in Heliochromie.

Strengthening Negatives with Hydroquinone.

In the *Revue Photographique* we find the following process due to Mr. A. Mangin for strengthening negatives with an old hydroquinone solution, instead of mercuric chloride, etc.:

The negative is immersed in a solution of

Old hydroquinone bath	55
Citric acid 1:10 (?)	20
Red potassium prussiate 1:10	10
Water	50

Mix in order.

In from two to three minutes the negative darkens, and it suffices when the desired intensity is reached, to wash the negative in running water for 10 or 15 minutes.

"If your negatives are stained yellow, if they are harsh and not transparent, treat them in this bath and the yellowness disappears, the contrasts are softened down and the whole picture very fine."

Eikonogen.

A.—For Instantanés.

Water, warm	1000
Sodium sulphate	300
Eikonogen	18
Potassium hydrate	50

B.—For Time Exposures.

Water, warm	1000
Sodium sulphite	40
Eikonogen	8
Potassium ferrocyanate	3
Sodium carbonate	160

Hydroquinone.

In his treaties of photography, "Hydroquinone et Potasse," Mr. G. Balagny gives the following directions to employ this developer:

Developer.

A.

Water	1000
Sodium sulphide	250
Hydroquinone	20

B.

Water	1000
Potassium hydrate	100
Yellow prussiate	50

C.

Water	1000
Potassium bromide	100

For Instantanés.

Water	40
A	80
C	2

For Time Exposure.

Water	40
A	80
C	6

Immerse the plate in one of these mixtures, then add B by small quantities according to the rationale method.

Two Processes to Tone Blue Proofs Black.

First Process.

A.

Water	100
Potassium carbonate	4

B.

Water	100
Tannin	4

Immerse the proof in A until the image has disappeared, then transfer it in B and wash when the proof is toned black.

Second Process.

A.

Water	100
Silver nitrate	6

B.

Potassium oxalate, solution 30 per cent.	30
Iron protosulphate, solution 30 per cent.	10

Immerse the proof in A until disappearance of the blue coloration; wash, and develop with B.

The second process give better blacks.—*La Nature.*

CHAUTAUQUA LETTER.

THE gates of the Assembly Grounds were closed this day at noon; the season for religious exercises and studies in a great variety of languages and sciences has begun, and our devoted Chancellor, the Right Rev. Dr. Vincent, and with him Hon. Lewis Miller, President of the Chautauqua Assembly, conducted the opening ceremonies.

Violent rain storms have prevailed in this section of the country during the last month, and have made it impossible to present our public building to the reception of the thousands of visitors. New structures, like the C. L. S. C. Hall, are far from being completed and the old as yet sadly out of repair.

The amphitheatre not yet being in a fit state to hold meetings in, the children's temple was selected for the first assemblies of those Chautauquan disciples who, notwithstanding hail, rain, and electric storms, had come punctually to the modern Mecca.

Till last night but few people had arrived on the grounds, but every train and boat of to-day brought hundreds of them, anxious to receive the instructions for which the Chautauqua Colleges are so justly and universally celebrated. The School of Photography, with usual promptness, was open as advertised, reception rooms, laboratories and printing-room, ready to receive visitors and students, and we registered three scholars, one of whom a lady missionary from India, on the first day. We have seven now.

Owing to the indifferent state of the weather, only preliminary work has been done, but we have still had the opportunity to take a few snap shots with the Triad and landscapes by timed exposure upon Carbutt orthochromatic plates. Sunshine and a clear atmosphere is all we pray for now. Many applications for scholarship have been made, everything is in perfect working order, and the outlook for a good season is all that can be desired.

No particular changes have been made on our premises, excepting improved working facilities in the laboratories, and for the making of lantern slides with the Scovill reducing and enlarging camera.

The annual exhibition of students' work surpasses anything heretofore seen in our rooms. With gratitude to our many students, and fully appreciating their diligence, attention and gradual development of artistic taste, the instructor looks with pride and satisfaction upon the beautiful specimens displayed and now open to the inspection of a critical public.

The last exhibit is probably that of Mrs. Mabel O. Wright, a collection of portraits, genres, and landscapes well printed upon platinum paper. Neal, of Colorado, who has magnificent views of Bear Creek Canyon, taken with the Waterbury B, and instantaneous views of railroad accidents and animals like bears, coyots and dogs, and with him next in order are the Floridian views and those of Northern Michigan, by R. S. Scadin. They are well printed on Omega and respectively on Three Crown albumen paper.

H. E. Canfield's "Views on the Cahayuga River," of the Assembly Grounds, and the well-known "Panama Rocks," are exceedingly fine; as photographic prints they are in the foremost ranks.

Miss Ella Moor's groups, her landscapes especially, those with printed-in skies, are distinguished by faultless accuracy of work and neatness in finish. Miss A. S. Turner has a large collection of fine architectural views, interiors and genres, and W. F. G. Geisse's, of New York (Harlem) landscapes taken with the Henry Clay camera can well rival with those above described. Our indefatigable friend, Gould W. Hart, exhibits several exceedingly fine landscapes and represents some of the most popular phases of Barnum's greatest show on earth, by snap-shot views taken with the 4 x 5 Waterbury.

Jenny Jackson displays many pictures of rocky strata, cascades and general landscapes, taken when with Professor F. Starr's geological expedition to study the valley of the Genesee. Excellent negatives, but unfortunately not as well printed as the fair student is able to do.

The exhibits of two students not quite a year connected with the school, deserve particular recognition, namely, the instantaneous views of Miss Agnes Pearson and the portraits by Carl Ostberg. Marvellous progress has been made by these students within a short time, and Ostberg's portraits may well rival with the work of many professional portraitists.

We cannot very well consider all the exhibits made, but will criticise on and off those most attractive, in our letters to THE PHOTOGRAPHIC TIMES, but there are yet two, so different in character from all the rest that we cannot abstain from mentioning them particularly.

One of them consists of exquisitely fine plain paper prints by W. S. Waterbury. Of perfectly neutral tone, brilliant, and detailed to any possible extent, they surpass all other matt-surface printing no matter by what method.

The other are, "Views of the Salt River Valley" by H. F. Robinson, of Arizona. He shows by his

excellent photographs how the ingenuity of man has transformed the barren wastes of the American desert into fertile lands whence the orange tree, banana, date, palm, and other fruit trees grow luxuriantly. Of equal interest, if not more so, are reproductions of sculptures and hieroglyphic characters inscribed upon the native rocks by prehistoric inhabitants.

It is quite interesting to observe the different printing methods selected by the students exhibiting. There are but a few collections printed on albumen paper, but they are evidently the best, they excel all others. Aristo, collodion and gelatine, and its variety Omega is extensively represented, but notwithstanding the advice given to students repeatedly, the great majority of them are over-toned. There are but few real good ones among them. Platinum paper has been used by one exhibitor only. There are a few bromide prints scattered, and one of them, a large reproduction, is toned well with uranium.

There are a great many very good blue prints made on paper prepared according to Lesson XI. By the way we will mention, blue prints, owing to spongy or absorbent paper, or to incorrectly prepared solution, are oftentimes feeble, monotonous, lacking brilliancy and clear whites. By immersing such prints in a much diluted solution of perchloride of iron a splendidly intense blue with perfect whites is obtained. One drachm of the official U. S. Ph. in 1 quart of water is the proper concentration.

It is too early yet to say what particular branch of photography will be taken up by the students of the advanced class. With beginners we rely upon the never failing Favorite A outfit and the Carbutt B plate, which is the starting point of our most successful scholars.

I will endeavor to give in my next letter more detailed accounts of the working of our school.

Charles Ehrmann,
Instructor C. S. P.

Chautauqua Assembly Grounds, June 30, 1892.

EELS AND FISHES.

In the year of grace one thousand eight hundred and ninety-one, the opening pages of the "American Annual of Photography" recalled most vividly to many of us the days long past, when as boys we sat in the old school-room, unable to concentrate our minds on the task before us, and as with dirty finger we pointed to certain symbolic letters on the first page of our dog-eared book, and repeated inaudibly, half mechanically, half unconsciously, what to us was an admitted fact, that "Peter Rice eats fish and catches eels." I say an admitted fact, because it was unquestioned; we neither knew nor cared who Peter Rice was, but that he ate fishes we did know, and that he also caught eels we also knew, because those mysterious letters, the signification of whose proper combination we never clearly understood, told us so in every book, and whatever was in books was to us true, else how could it ever have been printed. That was long years ago. It was not until the editor, in that year one thousand eight hundred and ninety-one, told us in graceful diction why we always had before us those mysterious letters which seem to be all that can be found in history relating to this Peter Rice, that I fully and clearly understood them. Then looking back to those old days, it seemed that in our angling for knowledge the eels were in abundance; indeed, most of us ate very few fish indeed, and I fear that the habit of calling all things fish that came to our nets became so deep rooted, that to-day most of us think it is of no use to try for the better catch when eels are so easily taken. But a new generation has entered our ranks, and many of them having tasted the fish are no longer satisfied with the less toothsome morsel. To the rest of us remains the task of casting out of our nets all wriggling things—as the editor advised—or retiring to the rear with those who are satisfied to be only catchers of eels. Doubtless there are many whom long habit has blinded, as it were, and who until their eyes are properly opened will never see that they have no fish.

Having tried for some time to cast the beam out of my own eye, let me indulge in one pluck at a mote in my brothers'. Within the year just passed it was my good fortune to wander through some of my boyish haunts in the Connecticut mountains, one favorite spot being a rocky glen down which dashed in many falls and rapids a rollicking little brook. Gray rocks rent and broken by those great forces which at some time upheaved all nature, rose in rugged precipices on either side. Gnarled oaks and cedars clung and grew wherever a crevice allowed their roots to crawl in and find nourishment. Lower down in the shade of the ponderous rocks were ferns, so fresh and green, that it seemed to me that no color ever equalled them anywhere else on earth, and through these ferns a little path came wandering down in company with the happy brook.

So familiar was the glen and so unchanged the scene, as I stood on the one spot which habit had taught me was the only point from which to see

all the beauty hidden there, that it seemed as though every bough of cedar, every frond of fern was just as it had been years ago.

A few days later, dusty and tired, I tramped into one of those towns near by, where the clatter of trip-hammer and the rattle of wheels make the warm and dusty traveller feel warmer, dustier, and more weary still. Up one of the noisy streets a photographer had hung out a frame of specimens. Some of them were views, and more for an excuse to rest than because I wanted to see them, I stopped to look. Among them was one of my favorite glen, but it was very disappointing. The camera had been badly placed and the picturesqueness was in a great degree spoiled. The combination of rocks, cascades, and pathway was such that the worst views which could be made of it would have a certain element of beauty in them. Such was the case with this picture, for while it was in a certain sense pretty, it lacked the harmony and life which made the glen itself so beautiful. The stream came tumbling down in an almost perpendicular line through the centre of the picture. On either side the walls of rock rose to nearly an even height, and the light fell directly down upon the top of everything, illuminating both sides of the chasm alike, and flattening out the path until it was almost unnoticeable. It gave me no rest to look at the picture, and turning from it in disappointment, I plodded on. A few doors beyond, the window of a picture dealer tempted me to stop again. A picture window has the same attraction for me that a flower garden has for a butterfly. I can never pass one without stopping to taste its sweets.

Strangely enough in this particular window in the companionship of water-colors and etchings, was another photograph of the same glen, but so different. In making this one, the photographer had placed his camera so that the brook was not a perpendicular line through the middle, but appearing first in the upper right side of the picture, descended diagonally to the foreground a little beyond the centre, showing its falls and rapids so perfectly, that it fairly seemed to dance and skip along. A time of day had been selected when the light falling obliquely, threw one rocky wall in deep shadow, while the other, though well lighted, was in no way hard or glaring, because the uneven surface of the rocks cast many little shadows which broke and softened the bright light. Here and there the overhanging ferns cast shadows on the path and marked its course by the side of the brook. Standing before that window in the dusty, busy thoroughfare, I looked at the picture and felt the noise and heat of the busy street fade slowly away. The bubbling of the brook, and the murmur of the cool breeze among the leaves and ferns, came in its stead, and the peace of the real glen settled upon my soul.

Now why had this photograph brought back so vividly the quiet restful air of the glen, while the other view of the same place failed to do it completely? They were both pictures of the same place, and were taken evidently at the same season of the year, and from very nearly the same point of view; yet there was this difference, one was full of life and feeling, while the other was dead. The answer followed close upon the question. One photographer had studied to make his picture from the best point of view, and had waited for the best condition of light, the other had been satisfied to make his at the time of day that he happened to be there, and from the position that was most convenient for him to set up the camera, although a move of a few feet would have placed it just where the other view was taken from. These fishers after the beautiful had both cast their nets in the same water, one rejected everything but good fish, while the other was satisfied with eels. How many of us do the first, how many the last?

Harry Platt.

THE DIAPHRAGM.

[Translated for The Photographic Times from the *Photo Gazette.*]

The diaphragm has for its object to let pass through the lens only the rays capable of producing a sharp image; by its action on the rays which provene from the edges of the lens, it increases the sharpness of the image; by lengthening the luminous pencils it increases the depth of focus and reduces the aberration of sphericity; by stopping the too oblique rays, it prevents the astigmatism.

The aberration of sphericity arises from this, that the focus of the rays which pass by the centre of the lens is not the same as that of the rays which come from the edges. This defect is so much the more sensible as the curve of the lens is more pronounced.

It is in part corrected by the judicious choice of the different kinds of glass which compose the lens, but it is especially diminished by stopping with a diaphragm the rays provening from the edges of the lens.

The shape of the opening of the diaphragm is not fixed, but it has been ascertained that in most cases the circular form is the most advantageous;

it is generally placed in a plane perpendicular to the optic axis. But nothing prevents other arrangements; thus it has been recommended for views with very luminous backgrounds a diaphragm with a triangular opening (Fig. 1), in order to

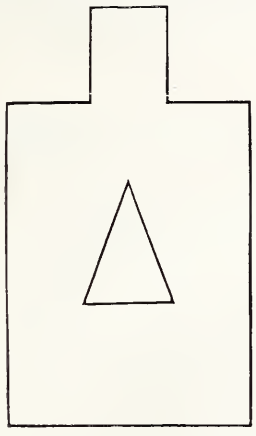


Fig. 1.

equalize the sum of light received by the sensitive plate; the rays coming from very actinic backgrounds and from the sky pass through the apex of the triangle, while those reflected by the foregrounds pass in greater number by the basis of the opening.

Sutton has proposed for the same purpose a diaphragm inclined forward (fig. 2). By examining this figure one sees that the rays coming from

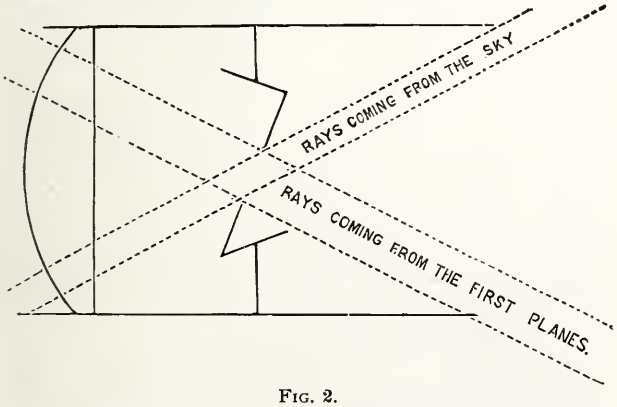


Fig. 2.

the sky and from the background must pass through a more narrow opening than those provening from the foregrounds.

Jannin has proposed a square diaphragm ; Norman Gliese has proposed diaphragms with several openings, Mitschel has precognized a diaphragm whose opening was constituted by a very narrow ring made on a copper plate, but the use of these various diaphragms was not sanctioned by practice. The first improvement in their construction has been to make all the openings on a copper disc adapted to the lens, and which it suffices to rotate to bring a different opening in the optic axis. Lastly, Hermagis, adapting an idea suggested and applied by Niepce, has constructed the iris diaphragm, which is now generally adopted by all first-class opticians.*

In single lenses the diaphragm is placed in front of the lens at a distance determinated by the optician. In combination lenses it is placed between the two lenses.

The best opticians calculate the openings of the diaphragms in such a manner as the exposure time doubles from one diaphragm to the next smaller, but it is evident that different numerations can produce the same result, and we would like to see a uniform graduation for all the lenses.

Until the Photographic Congress has succeeded to cause all the opticians to adopt an unique rule, we cannot too much advise the operators of marking themselves their diaphragms in a uniform manner, that is to adopt the same numeration for all their lenses.

Knowing the focal length of a lens, here is the manner of proceeding to know the relation of illumination of the diaphragms :

Let 0^m24 be the focus of the lens ; we place the first diaphragm on a rule graduated in millimetres in order to know the diameter of the opening ; let us suppose that this diameter is 0^m030, we see that the opening is equal to one eighth of the focal length, and we mark the opening of this diaphragm with the figure f/8 ; the next one will have O^m021 of opening, that is one-eleventh of the focus, it will be marked f/11 ; then we find O^m015 for the diameter of the diaphragm f/16 and O^m0105 for the diaphragm f/22. This is what is termed to mark the diaphragms in function of focus.

Let us see now what is the influence of the diaphragms on the exposure-time: With two different diaphragms the exposure time varies as the square of the denominators of the fractions indicating the coefficient of illumination. Thus, after having operated with the diaphragm f/8, we judge that, to obtain more depth of focus, or a greater sharpness on the edges, the diaphragm f/22 should be employed, how long shall we expose ? To know it, it suffices to raise the two denominators to the square :

$$8 \times 8 = 64. \quad 22 \times 22 = 484.$$

Hence the two exposure-times will be as 64 : 484 or as 16 : 121, or, in practice, as 1 : 8. If one has exposed one second the first time, he will expose eight seconds the second time with the other diaphragm.

The numeration generally adopted for the diaphragms is the following :

f/4, f/5.6, f/11.3, f/16, f/22.6, f/32, f/45, f/64.

* The iris diaphragm was imagined in 1859 by C. C. Harison, one of the inventors of the globe or hemispherical lens.—Trad.

It is the most convenient, and, as it is seen by this numeration the exposure-time should be doubled when using the next smaller diaphragm.

Now let us make a rapid review of the different numerations adopted by opticians. In France, most of the diaphragms are marked by simple figures 1, 2, 3, 4, without indications of the relation between the opening and the focal length ; from which it results that many operators designate their diaphragm as N°1, N°3, etc., which has no signification ; others measure the opening of their diaphragms, without taking any notice of the focal length, and say they have made their cliché with a diaphragm having an opening of O^{m}010, O^{m}015 ; this is no more comprehensive and gives no information whatever. If they said that they have operated with a diaphragm f/16, f/32, everybody would understand it.

The numeration the most employed in France is f/10, f/15, f/20, f/30, f/40 f/60, but it is very seldom marked on the diaphragms and many prejudicial errors consequently result therefrom.

D'H.

(*To be continued.*)

PHOTOGRAPHIC PROCESSES WITH MANGANIC SALTS.

I.

In a photographic treatise Von Monckhoven points out the property which potassium manganate possesses to be modified by the action of light.

We have constated that all the alkaline manganates and permanganates possess this same property.

Until now the experiments made to apply these substances to the production of photographic images have completely failed because their use presents the inconveniences following :

The manganates are decomposed by pure water ; as the permanganate they are, in alkaline solution, more or less completely reduced, even in the dark, by the organic matters, gelatine, albumen, gum arabic, etc. When a sheet of paper is imbued with these solutions, the reduction partially occurs ; the yellow brown substance which is formed incompletely bleaches under the action of the solar rays.

If one searches to introduce these bodies in collodion, the reduction equally occurs in the dark. All the attempts made to avoid this decomposition have given no result.

It has been especially tried to compound the manganic solutions with energetic oxidizers, to prepare collodions without alcohol by means of other solvents, to operate at a low temperature in the most complete obscurity, none of these preparations did prevent the alteration which it is indispensable to avoid. So that the images, which the manganates and permanganates can produce after a few days' exposure to the sun, are weak, veiled, and entirely without utility.

Manganese dioxide dissolved in potassium cyanide has also been indicated as very sensitive to light.* This substance seems to present inconveniences analogous to those which have caused to discard the bodies above cited.

II.

For a long time the salts of sesquioxide of iron, which light transforms into salts of protoxide, are employed in photography. It is on this action that are based the processes with platina, ferroprussiate, etc.

In the series of the metals the place of manganese being near that of iron, and the properties of the corresponding combination of these metals being similar in a general way, we have been led to suppose that the salts of sesquioxide of manganese could be brought to the minimum under the luminous influence in the same manner as the corresponding salts of iron.

We meet with numerous difficulties in the examination of this hypothesis, because the manganic salts have been but superficially studied by a small number of chemists.

Most of these salts are of a great instability; they are generally dissociated by water, decomposed at a low temperature or in the cold under the action of light, of organic matters; so that these substances have been rather superficially seen than isolated and studied, at least for a great number of them. Amongst the best known, we must cite: the manganic fluoride (Berzelius, Nickles), the sulphate,† the phosphate,‡ the double sulphate manganico-aluminic, manganico chromic, manganico-ferric,§ and, lastly, the arseniate and the manganic acetate.‖ Some other salts, such as the manganic chloride, have only been obtained in solution.

The fluoride and the acetate coated on paper are reduced by light as manganous salts and give a photographic image, but when one tries to treat it afterwards by a reagent capable to difference the manganous salt from the manganic not decomposed in order to accentuate and fix the image, or when it is washed, the water dissociates the manganic salt, which has found its way into the paste of the paper, and precipitates the oxide which imparts a uniform brownish tint to the proof.

The manganic sulphate exists in solution only in presence of a great excess of sulphuric acid, it is also decomposed by water. Lastly, the double sulphates are not or very little sensitive to light.

Consequently these different substances do not seem to be capable of being utilized. Hence, of the manganic salts, the phosphate, more stable, is the only one to which we can have recourse for the purpose in question.

August and Louis Lumière.

(*To be continued.*)

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* Fabre. Traité encyclopédique de Photograph. Vol. III., p. 134.

† Carius, "Ann. der Chem. und Pharm.," vol. xcviii., p. 53.

‡ H. Rose Pogg, "Ann.," vol. cv., p. 286, and "Repert. de Chimie Pure," 1859, p. 239.

§ Etart, *Compt. Rend.*, vol. lxxxvi., p. 1399, and vol. lxxxvii., p. 602.

‖ Christensen, *Journ. fur prakt.*, vol. xxviii., p. 163.

Notes and News.

Prof. Ehrmann, who is at present at Chautauqua conducting his summer classes in photography, reports an auspicious commencement of the annual summer section of the Chautauqua School of Photography. His letter in another part of the magazine, will be read with interest.

The Photographic Convention of the United Kingdom of Great Britain commenced its regular annual meetings, Monday, July 11th, at Edinburgh, as announced.

The President, Mr. George Davison, delivered his address on that evening in the hall of the Scottish Geographical Society.

Tuesday was devoted to an outing to Milrose and Dryburgh; Wednesday was a great technical day, on which there was no excursions, but most of the papers were read, of which we shall reprint the most noteworthy in these columns; Thursday is to be partly for excursions and partly for papers, and to-day will be altogether devoted to excursions and festivities, among which a dinner and smoking concert may be mentioned. Saturday's programme includes nothing but a meeting of the Council.

A complete report of the Convention will be given in a later issues of the magazine.

Action of Light on Sulphite of Silver.—In a recent number of the *Chemical News*, Mr. W. H. Sodean relates some experiments with regard to this action of light which have a decided photographic interest. The salt was prepared by passing sulphurous anhydride into a solution of recrystallized nitrate of silver, washing the precipitate thoroughly, and completely desiccating by keeping it in a vaccum over a mixture of sulphuric and chromic acids. When kept in hermetically closed tubes it was slightly blackened after a fortnight's exposure to sunlight. When the temperature was raised the blackening was more intense and more quickly brought about. It was noted also that when moisture was present the darkening was accelerated. This latter effect might be anticipated, for it is well known that many familiar gaseous reactions are absolutely impossible when the gases before mixing and the containing vessels have been rendered perfectly free from water vapor. Quite recently, for example, it has been shown that sulphuretted hydrogen gas, so fatal to silver prints and injurious to silver articles, is quite without action upon silver and other salts when quite dry.

Ammonia as a Fixing Agent.—The evanescent character of silver is primarily attributed to the hyposulphite of soda used for fixing, or the hyposulphite compounds formed during the operations and their imperfect removal in the after-washing. Indeed directly, or indirectly, "hypo" is made, and not without cause, the bugbear of fugitive silver prints. Now, it may not be generally known to a great number of modern photographers that ammonia is a very good fixing agent, the unaltered by light chloride of silver being freely soluble in that menstruum. In olden times it was freely used in that capacity. The unfortunate thing in connection with ammonia as a fixant is that it cannot be used with albumenized paper, inasmuch as it dissolves the albumen. There is no reason, however, why it should not be employed for plain paper, as by its use no hyposulphites—if they be the cause of fugitiveness—could be formed. Those who are working with plain paper might give it a trial. It need scarcely be remarked that ammonia is by no means an agreeable material to work with; but some might be inclined to overlook that fact if permanence were ensured.—*The British Journal of Photography.*

Correspondence.

AN OPEN LETTER.

THE INTERNATIONAL PHOTOGRAPHIC EXCHANGE,
HELSINGFORS, FINLAND, March 15, 1892.

We desire herewith to acquaint you of the establishment of the International Photographic Exchange, and to offer you the means of commencing a most valuable and instructive collection of photos at a minimum outlay. The idea is quite novel, and we are convinced that you, on reflection, will observe what a permanent and pleasing pastime we are offering you.

If you are a photographer, or in any way acquainted with this pleasing occupation, you will know that art collections are most valuable and sought after, and that people go long distances to study them, as being the best means of assisting the art photographer in his work; so that a collection of the kind we propose to assist you in acquiring will, quite apart from the pleasure it will give, be of the greatest use to you.

What we now invite you to do is to choose one or more of the best negatives you have, have copies—as many as you like—printed from them, and send these to us. In exchange for these you will receive a number of photographs, all different, but of as near as possible the same value, taken by photographers in all parts of the world.

It is not proposed, however, to confine these advantages to people who practise photography, either for pleasure or for profit, as anybody will be able to obtain a collection in this unique and cheap way, by simply ordering from a professional photographer a number of unmounted prints, which can then be sent to us for exchange.

Consider the interest of an International Album, and the value and pleasure it will give you. You will have the best photos sent you from every country in the world where this notice circulates; and, as everybody will, in his own interest, send the best he can produce, it will be seen that the Exchange will be enabled to send the best photos procurable—in fact, photos that cannot in any other way be obtained. We advise you to commence at once, and follow up our suggestion, by starting your own international gallery of the pictorial world and current events. It will grow in interest and value.

We may suggest that, when choosing your negative, you should try as much as possible to get one representing life in your own country. This will be most valued by those, in possibly quite another hemisphere, who may chance to get your pictures in exchange.

Kindly mention The International Photographic Exchange to any of your friends interested in photography; they will thank you for it.

Will from this day receive photographs for exchange upon the following conditions:

I. Photographs of any kind (albumen, aristo-bromide,

on silk, etc.) to be sent us unmounted. Each print to have written on the back what it represents, and date when taken, in lead pencil.

II. They will be classified in six divisions, as follows:

Division.	About size of photos.	Size.	Rate of charge each.
I.	10 x 12 Bismarck	1½	1½d.
II.	8 x 10 Boudoir	1	1¼d.
III.	5 x 7 Cabinet	½	1 d.
IV.	4 x 5 Carte de visite	¼	¾d.
V.	2 x 3 Round 2½ inches	⅛	½d.
VI.	1½ x 1½ " 1½ "	1/16	

As regards size, we accordingly count one 8 x 10 equal to two 4 x 5, or four of 4 x 5, etc.

III. To any sender who does not specially ask for only the same sized photos as he or she has sent us we will return principally the same size, but may, if we think desirable, send others of equal value of those sent.

IV. To anybody who specially desires it, we are prepared to return him photographs of any special kind. Say that he wishes a selection of portraits. He has then to send us such, and let us know that he wishes the same kind returned to him. We will then endeavor to send him as varied a selection as possible. If photos from one particular country are desired, we shall be pleased to satisfy our customer as far as possible, but must, of course, reserve for ourselves reasonable time to obtain them, if they should not be in stock.

V. If several persons send, under the same name, we desire to know how many prints of the same negative we may send.

VI. Remittances may be sent by ordinary English P.O.O. or stamps, at rates as per above. When 100 or more photos are sent, the following reductions will be allowed:

100 to 250, 25 per cent. off.

250 to 500, 33⅓ per cent. off.

500, and to all photographic clubs, 50 per cent. off.

Return postage will be paid by us on all exchange packets for which commission exceeds 1s. If below this, 2½d. should be added to remittance to cover postage.

VII. Postage to be paid on all communications and packets sent, or they will be returned. To avoid mistakes, it is absolutely essential that all packets sent should have sender's name and address distinctly written on the wrapper.

VIII. Photos are best sent by book or parcels post, and should be carefully enclosed between pieces of cardboard, or rolled on cardboard rollers.

IX. We do not hold ourselves responsible for packages or letters lost in transmission. Those who desire their photo packets registered should enclose 2½d. extra.

X. Every photograph sent will be entered and registered here, and the return pictures will be despatched within a fortnight after receipt.

Charles Hamfeldt,
K. E. Stahlberg,
Proprietors.

INTERNATIONAL UNION OF PHOTOGRAPHY.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: The International Congress of Photography, which assembled at Brussels in the month of August of last year, had as Order of the Day, the discussion of questions relating to the best means of bringing about a closer connection between the different amateur photographic societies, and of all other persons practising or interested in the photographic art.

Starting with the idea that a rapid and certain progress in the art could only be obtained by such a close connection existing between all those who are interested in the development of this branch of human knowledge, Mr. S. Pector, General Secretary of the Congress of 1889, conceived the idea of forming an "Universal Photographic Union," an institution which should be, as it were, a federation of all the amateur societies and of all persons interested in the subject.

The society would have for its object, in the first place, the dissemination of ideas and the making of constant efforts to establish everywhere unity of action in regard to photography, so that facilities for the comprehension, study and utilization of any new facts might be afforded to all. These facts would henceforth be published in accordance with a method universally adopted, based and expressed on a system generally admitted.

The society would also have for its object the collection of information in regard to all fresh discoveries in photography, in the Old and New World, in order to make them universally known to all persons interested in the conquests made by the genius of man over the as yet unknown dominion of the photographic art.

In short, by means of the society, every one would have at his disposal a sure and disinterested source of information in regard to all matters pertaining to the art. The idea, so simple and practical, was warmly welcomed at the Congress of Brussels; and the establishment of the "International Union of Photography" was unanimously resolved upon.

You will find herewith a copy of the proposed Rules and Regulations for its managment.

We trust that you will fully understand the importance of the undertaking, and that you will kindly second the efforts of the Committee. We request you to be good enough to enroll yourself as a member of the "International Union of Photography," and in such case you will kindly send to one of the Secretaries, when filled up and signed, the printed form inclosed herewith.

We have the honor to be, sir,

Your obedient servants,

Organizing Committee.

President,
J. MAES.
General Secretaries,
A. GODERUS, Avt,
8 Rue de Poivre, Ghent (Belgium).
S. PECTOR,
9 Rue Lincoln, Paris.

Members,
J. JANSSEN.
L. WARNERKE,
E. PRICAM,
DR. E. LIESEGANG.
H. COLARD.

Members.

Messrs. Janssen, Liesegang, Warnerke, Colard, *Members of the Committee.*

Messrs. Balagny, De la Baume Pluvinel, Bucquet, Davanne, Fabre, Gers, Goderus, Gravier, Guilleminot, Maes, Pector, Petersen, Gal Sebert, Selb, Sreznowsky, Captain Abney, *Members of the Congress of Brussels.*

PROJECT FOR AN INTERNATIONAL PHOTOGRAPHIC UNION.

Provisional Statutes.*

I.—Constitution.—Objects.—Headquarters.

Art. I.—The institution is established with the object of bringing about a close union between amateur photographic societies and all other persons who practise, or are interested in photography. The institution shall be known as: The *International Photographic Union.*

Art. II.—The headquarters of the *International Photographic Union* are in Belgium.

Art. III.—The *International Union of Photography* has for its object the establishment of one uniform organization in regard to all matters pertaining to the photographic art; and the promotion of communication between the members, so as to facilitate the acquisition, as much as possible, of all information which may be of use to the members.

II.—Membership and Subscriptions.

Art. IV.—All persons, members of a regularly constituted amateur photographic society, as well as all persons interested in the art, are eligible for membership of the *International Photographic Union.*

Art. V.—The subscription for working members shall be 20 francs (16/= S) a year.

The title of "Patron" shall be accorded to every person who shall subscribe the sum of 100 francs ($20) to the funds of the Union.

The title of "Founder" shall be accorded to every person who shall subscribe the sum of 300 francs ($60) to the funds of the Union before its first sitting (see Article II.). After such date, persons subscribing this sum shall be called Life-Members.

Art. VI.—Members who are "Founders" and "Life-Members" do not pay an annual subscription. This, however, does not apply to amateur photographic societies which desire to have the title of 'Founders." Amateur societies cannot be "Life-Members."

Art. VII.—In order to be enrolled as member of the *International Photographic Union*, it is sufficient to make an application in writing to one of the secretaries, remitting at the same time the amount of the donation and of the annual subscription.

Art. VIII.—"Founders," "Life-Members" and Working Members will receive gratuitously all publications issued by the Union.

The amateur societies which are members of the *International Union of Photography* will be represented at the Congress by a Delegate.

"Founders," "Life-Members," and Working Members and the Delegates of the Affiliated Societies will alone have the right to vote. Every person who shall have been a member of the committees organizing the meeting and the Congress shall have the right to be present at the sittings of the Union.

III.—Management

Art. IX.—The *International Photographic Union* shall be managed by a committee, composed of a *President*, a *Vice-President*, and five *Councillors*, chosen from among the members most qualified to discharge these functions. There shall be in addition a *Secretary-General*, resident in Belgium, and *Honorary Secretaries* in other countries.

Art. X.—The Managing Committee shall be elected by the *International Photographic Union* by a simple majority of votes, for a period of five years. These members are always eligible for re-election. The Secretary-General and the Honorary Secretaries shall be appointed by the Managing Committee.

IV.—Meetings and Congresses.

Art. XI.—The *International Photographic Union* shall hold an annual meeting in some town to be designated at the preceding meeting.

The first meeting shall be held in Antwerp, in August, 1892.

Art. XII.—The amateur societies affiliated to the Union of the town where the meeting shall take place, and in case of need, of the country itself, shall assist the Committee of Management in the organization of the meeting.

Art. XIII.—The programme and the Agenda Paper of each meeting shall be drawn up by the Managing Committee, in conjunction with the amateur societies of the town where the session shall be held. The programme shall include an opening sitting, at which the President of the Union or his representative shall read a report on the progress of photography during the preceding session.

After the opening sitting the meeting shall have further sittings, at which will be discussed the different questions placed on the Agenda paper, and when communications, experiments, analyses, etc., will also be received and discussed.

There may be held in addition, lectures, private meetings, exhibitions of photography and of matters pertaining to it; also excursions arranged and visits paid to any objects of interest in the neighborhood which may interest the persons attending the Congress.

Art. XIV.—Independently of the ordinary annual meetings, the *International Photographic Union* may organize a Congress, which shall have for its object the perfecting or extension of rules, and processes in photography established by any preceding Congress.

Art. XV.—A Congress cannot be held unless its date shall have been fixed at the previous meeting, and the matters to be submitted to it shall have been previously determined.

Art. XVI.—Every regulation relative to any matter not decided upon at a previous Congress, must command an absolute majority of votes of the members present at the Congress. If the regulation in question be intended to replace or modify a regulation settled by a preceding Congress, it should, in order to be accepted, command at least three-fourths of the votes of the members present.

Art. XVII.—In order to take part in the Congress organized by the Union it is not necessary to be a member of the Union; but any one not a member wishing to take part should be provided with a card of admission, the price of which would be ten francs (8/).

Art. XVIII.—Minutes of the proceedings of each meeting and of each Congress will be duly kept by the

* These statutes, the principles of which were adopted by the Congress, at its sitting of the 28th August, 1891, have been altered and revised in regard to their form, by the ad-interim Committee. They will be submitted for approval to the Union, at its first sitting,

Secretary-General, who will make an official report of all the sittings. The said official report will contain a short analysis of every communication received, the authors of which will thus see they have been duly noted.

ART. XIX.—The local amateur societies of the towns in which the meeting and Congress shall have been held, and which shall have become affiliated to the Union, will, together with the Managing Committee, see that the results of the meeting or of the Congress shall receive the widest publicity through the medium of the press.

V.—Publications.

1st. Annual.

ART. XX.—The Union will publish annually an *International Illustrated Annual*, containing among other matter:

1. The Statutes of the Union.
2. The list of members and of subscribers.
3. The official report of the meetings.
4. The official Report of the Congress.
5. The general results of the resolutions come to at the preceding Congresses.
6. The greatest possible amount of information in regard to recent photographic discoveries, and of receipts or formulas of the different processes in common practice.
7. The name of all the photographic societies of the whole world, and also a list of journals devoted to photography.
8. An official report of all works on photography, which have been published during the year, and the authors of which are members of the Union. This Annual to be edited and published in three different languages, viz.: German, English and French.

2d. Journal.

ART. XXI.—Besides this Annual, the "International Photographic Union" will publish as soon as its funds shall permit, an *Illustrated Quarterly Journal*, containing an account of all discoveries, facts, information, etc., recently come to light in the photographic world. This journal, like the Annual, shall be published in three editions in different languages. It may contain original articles signed by their authors and admitted by the Editorial Committee. This body shall draw up a summary of the said article, to be published in the two editions of the language other than that employed by the author.

ART. XXII.—The Annual and the Journal shall be illustrated by the most perfected processes pertaining to photography. They may be published in other foreign languages, if the subscriptions of members, who make a demand to this effect, shall be sufficient to cover the cost of such publications.

ART. XXIII.—The Editorial Committee shall place itself in connection with the amateur photographic societies of every country, in order to receive prompt information in regard to any new photographic discoveries which the various societies wish to make known. The Commit ee will also place itself in correspondence with the members and all other persons interested in receiving the communications.

ART. XXIV.—The Annual and the Journal may contain advertisements which have a direct bearing on the photographic art. These advertisements shall be inserted quite apart from the body of the works themselves.

Queries and Answers.

294 ACME.—How can I produce high gloss on unmounted albumen prints?

294 *Answer.*—By squeegeeing them upon ferrotype, glass, or ebonite plates, the same as Aristo or Omega paper.

295 L. M.—Lantern-slides upon Carbutt plates, developed with ferrous oxalate are harsh and glassy, no matter how fine detailed the negative or how long the exposure. What is the cause of it?

295 *Answer.*—The developer is probably too acid.

296 ELGIN.—What is the purpose of adding glacial acetic acid to the uranium and ferricyanide of potassium solution for toning bromide prints? Experience shows toning can just as well be carried on without the acid.

296 *Answer.*—Certainly, but without acid the bright portions of the picture are never white but always tinged yellow more or less. Ferricyanide of potassium has the property to harden the gelatine film; when the toning solution is applied, the softened film absorbs it readily, it is retained through the film becoming hard, and the colored solution cannot possibly be removed by washing. The acid counteracting the ferricyanide keeps the film in soft condition, permits thorough washing and the production of clear whites on paper, or perfect transparency on diapositives is thus accomplished.

297 M. P. KLETT has attempted to develop Omega paper prints not fully printed out with eikonogen and hydrochinon, but in either case have the prints turned black all over. How are insufficiently-printed chloride of silver papers developed? he asks.

297 *Answer.*—Develop with acid pyrogallol.

298 MARION P.—Admitting cherry and golden cloth combined to give a safe dark-room light, the question arises: Are the colors of these fabrics permanent, or will they bleach out, when exposed to sunlight?

298 *Answer.*—One of the dark-rooms of Chautauqua School of Photography receives light through a window covered with two thicknesses of cherry and between them one of golden fabric. They were put up a year ago; the window with southern exposure is in sunlight all day, still the colors have not changed the least, and the light is still safe enough to handle the most sensitive plates.

299 IN DESPAIR.—Many of the plate backings recommended by various photographic journals to do away with halation when photographing interiors have been tried by this correspondent, asphaltum, collodion tinged with saunders and other dyes, Guihon's opaque, lampblack and gum, and many others, but he finds it difficult to remove them completely before developing the plate. Is there nothing he asks that will detach easily from the plate without leaving any impediment upon it?

299 *Answer.*—Moisten a piece of black or brown carbon tissue with water, cut somewhat smaller than the plate and squeegee upon it. Before developing the plate you may strip off the tissue as easily as an aristo print from a tintype plate.

300 G. U. L.—What is the function of rochelle salt in the kallitype developer?

300 *Answer.*—It assists to reduce the silver to the metallic state.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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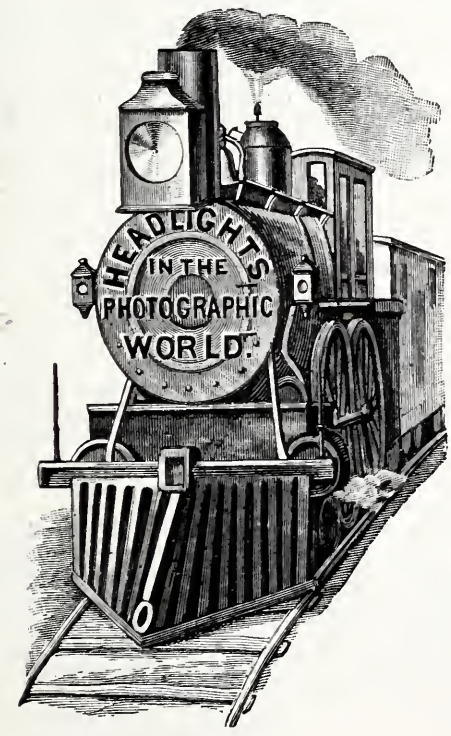
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All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
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THE SCOVILL & ADAMS CO., PUBLISHERS,
423 Broome St., New York, U.S.A.

"The 'Henry Clay' is a good one."—GAYTON A. DOUGLASS, of Douglass & Shuey Co., Photographic Merchants.

Commercial Intelligence.

PARIS.

THE SCOVILL & ADAMS CO.

Gentlemen :—On calling on H. Caretti's this morning to develop a few exposures, made with my Henry Clay, he was so fascinated with the camera that he desired me to order one for his own use at once, and with holders to use my films, so please forward at earliest moment one Henry Clay Camera for 5 x 7 films, like mine. * * * *

Yours truly,
Signed, JOHN CARBUTT.

15 WALL STREET, N. Y.,
April 15, 1892.

THE SCOVILL & ADAMS CO.,
423 Broome St., N. Y.

Gentlemen :—I am glad to be able to state that the new 20 x 24 Portrait Camera lately sent to me is exceedingly satisfactory, and that I regard it as a first-class piece of mechanism.

Though of the size generally somewhat unwieldy, I find it operates quite as well as a small camera, and the adjustments about it are so accurately fitted that I find no lost motion or any difficulty whatever in their manipulation. Yours truly,

E. N. DICKERSON.

A Model Gallery.—Waterbury now has one of the largest and most complete art galleries in New England, and without doubt the finest photographic studio in Connecticut While Faulmann's orchestra played, hundreds of Waterbury people attended the opening of Adt's rejuvenated and enlarged art rooms in the Ayers building on Bank Street. The rooms on the lower floor, separated by pretty grill work, were gay with flowers and bright with many beautiful oil paintings, engravings, water colors and etchings attractively arranged. On the first floor of the studio Mr. Adt has a handsomely appointed private office, while the second floor is given up to the operating and waiting rooms, all nicely furnished. With two floors of the Ayers building and a portion of two floors in an adjoining building, room is found for a modern framing department on the third floor. The studio is lighted throughout with electricity and many conveniences make the establishment a model one. Nine people, not including Mr. Adt, are employed in the establishment which, with its many art treasures, is open for inspection both day and night. This is Mr. Adt's tenth successful year in the photographic business, eight of which have been in the Ayers building. —*The Waterbury American.*

Book News for July is rich in illustrations from new books, and presents life-like portraits of Colonel Alexander McClure, of the Philadelphia *Times*, and of Richard Harding Davis, the young Philadelphian, whose stories of life in American cities have made him famous.

Business Notices.

FOR SALE AT HALF PRICE.—Twenty-four spools Eastman's Transparent Film, 4¾ inch, twenty-four exposure, fresh. Regular price $2.25 per spool. Will sell at 50 per cent. off. J. C. SOMERVILLE,
411 and 413 Washington Ave., St. Louis, Mo.

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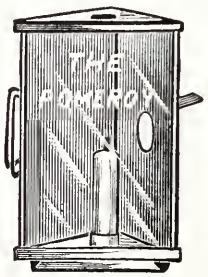
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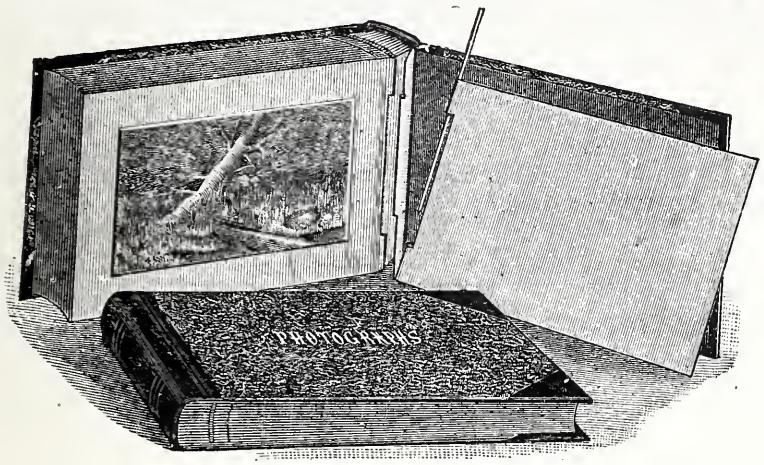
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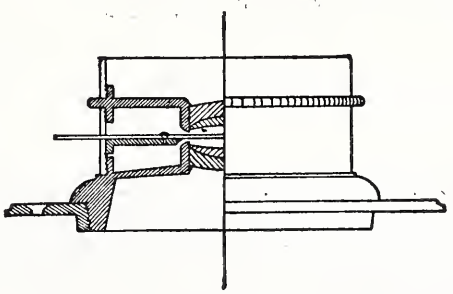
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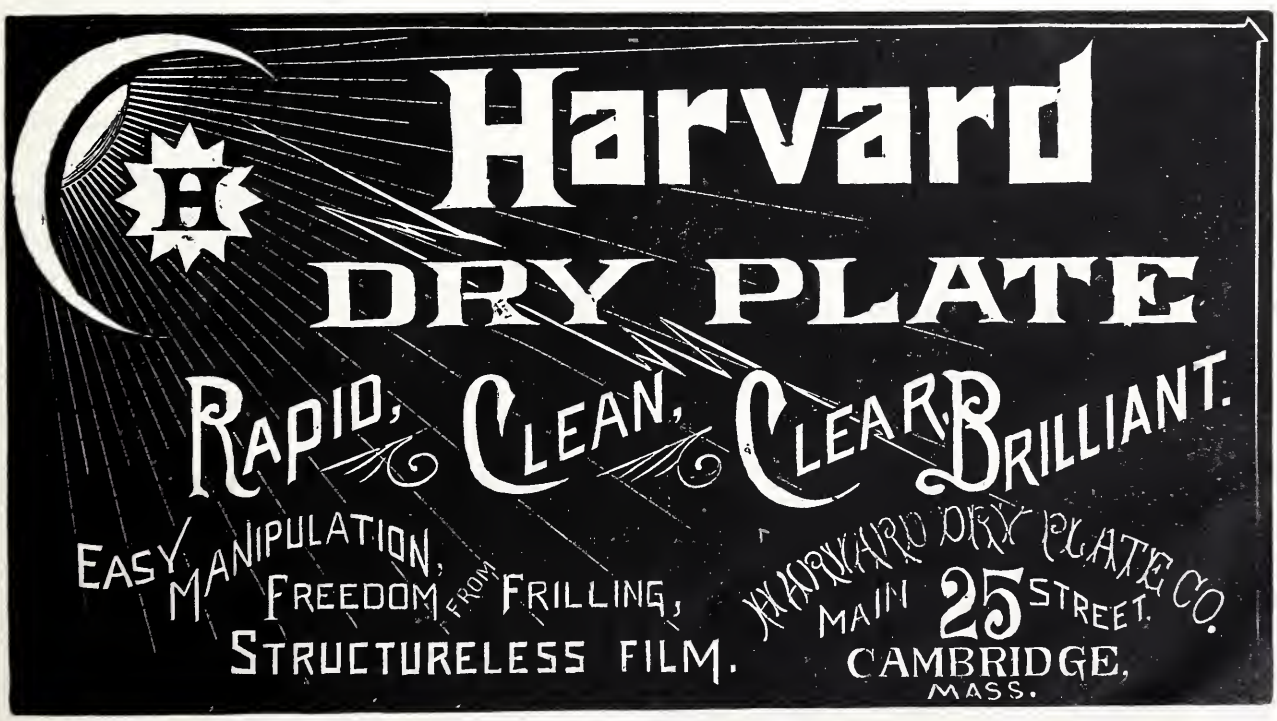
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GEORGE MURPHY, Manufacturer, Importer and Dealer,
57 East 9th Street, New York.

You want a New Camera Stand?



New England Agents for American Optical Co.'s Apparatus. Best in the world.
Send for Price List. : : : :

WHY NOT GET THE BEST?

We claim that **The Semi-Centennial Camera Stand**

BECAUSE— **IS THE BEST.**

It is simple in construction and will not get out of order.

It will enable you to get your Camera within 13 inches of the floor, or as high as you wish from the floor.

It is fitted with turning casters, with rubber wheels. Strong, Rigid, Easy in Operation, and Ornamental in Appearance.

It is the invention of a practical photographer and is perfected in its details. WARRANTED PERFECT.

FOR SALE BY ALL DEALERS.

PRICE, Boxed, $25.00.

NEW ORTHO-PANACTINIC LENS.
H. R. & CO.'S ALBUMEN PAPER.

HORGAN, ROBEY & CO., Sole Agents,
34 Bromfield Street, BOSTON, MASS.

MORRISON WIDE-ANGLE VIEW LENSES.



These lenses are absolutely rectilinear; they embrace an angle of 100 degrees, and are the most rapid *wide-angle* lenses made.

No. of Lens.	Diameter of Lens.	Size of Plate.	Equivalent Focus.	Price.	
0..1	inch...$3\frac{1}{4}$x$4\frac{1}{4}$	inch...	$2\frac{1}{4}$ inch...	each, $20.00	
2..1	" ...4 x 5	" ...	$3\frac{1}{2}$ " ...	" 25.00	
3..1	" ...$4\frac{1}{2}$x $6\frac{1}{2}$	" ...	$4\frac{1}{2}$ " ...	" 25.00	These 5 sizes will fit into 1 flange.
4..1	" ...5 x 8	" ...	$5\frac{1}{2}$ " ...	" 25.00	
5..1	" ...$6\frac{1}{2}$x $8\frac{1}{2}$	" ...	$6\frac{1}{2}$ " ...	" 25.00	
6..1	" ...8 x10	" ...	8 " ...	" 30.00	
7..$1\frac{1}{2}$	" ...11x14	" ...	$10\frac{1}{2}$ " ...	" 40.00	These 2 sizes will fit into 1 flange.
8..$1\frac{1}{2}$	" ...14x17	" ...	14 " ...	" 50.00	
9..$1\frac{1}{2}$	" ...17x20	" ...	17 " ...	" 60.00	These 3 sizes will fit into 1 flange.
10..$1\frac{1}{2}$	" ...20x24	" ...	22 " ...	" 80.00	
11..$1\frac{1}{2}$	" ...25x30	" ...	28 " ...	" 100.00	

☞ Nos. 1 to 6 are all made in matched pairs for stereoscopic work. The shorter-focused lenses are especially adapted for street and other views in confined situations. For general purposes, a pair of No. 5 lenses will be found most useful.

FOR SALE BY ALL DEALERS.

A. M. Collins
Manufacturing Company

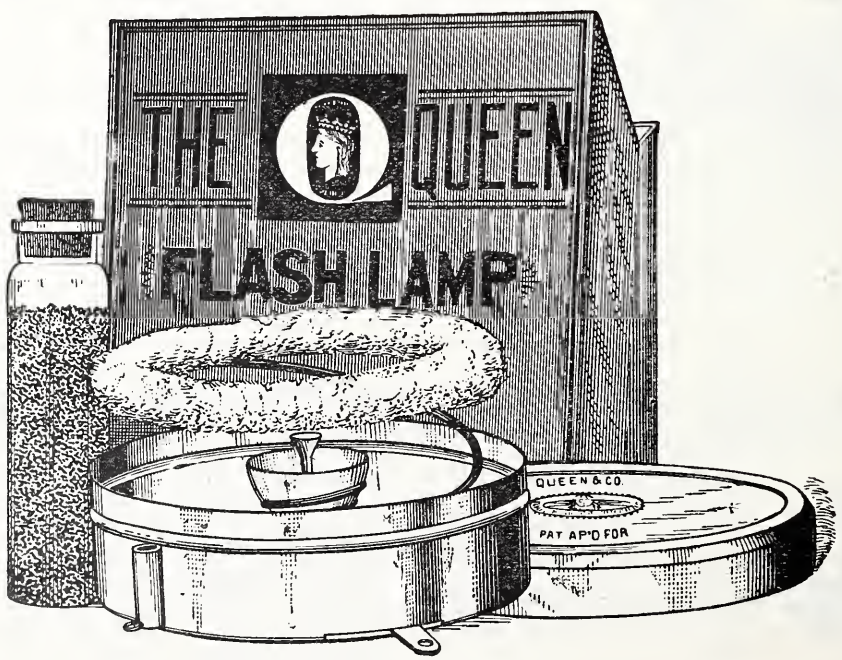
would call attention to Dealers in Photographic Supplies to their superior facilities for the manufacture and distribution of Photographic Cards, claiming that they have always in stock, or are prepared to make promptly to order, a greater variety and much larger quantity of Cards of superior quality than any other establishment in this or, perhaps, any other country.

Warehouse, No. 527 Arch Street,
Philadelphia.

QUEEN'S FLASH LAMPS

THE ONLY ENTIRELY SATISFACTORY FLASH LIGHT APPARATUS IN EXISTENCE.

Mailed to any address upon receipt of $1.50.



$1.50

STATISTICS:

Depth 1¼ inches
Diameter 4 "
Weight 4 ounces.

Charge (small) 20 Gr., (costs about 1½ cents.)
" (large) 30 Gr., " 2 "

Size of room effectively lit when good lenses are used, about 25 x 30 ft.
Size of room effectively lit when cheap lenses are used, about 16 x 20 ft.

Time consumed in getting the lamp ready for discharge, 1½ minutes.

Jas. W. Queen & Co., Phila.

The Buffalo Argentic Paper

(EVERY SHEET GUARANTEED).

WITHOUT large advertising or expensive demonstrating is rapidly taking the lead.

MERIT alone can do this, and users of Bromide Paper, who are ambitious to make the highest standard of work, are asked to give it a trial.

RESULTS that have not heretofore been expected with this article are possible with this brand.

Its delicacy of half-tones renders it peculiarly suitable for producing the warm or Sepia tones. FORMULA SENT FREE. PRINTS MADE FOR THE TRADE.

The Hoover Patent Printing Machine can now be had. **Price, $100.**

Our goods are for sale through all Stock Houses, who will send you circulars upon application.

BUFFALO ARGENTIC PAPER CO.

Perfected BP Bradfisch

ARISTOTYPE PAPER.

A PERFECT SUBSTITUTE FOR ALBUMEN PAPER.

This paper prints with negatives of **ordinary** density, and gives **rich** and **brilliant** results, with clear and prominent whites.

It does **not** stick, nor does the surface of the print rub off.

THE 

is recommended for use with Aristotype Paper.

It works perfectly and is always clear.

For Sale by all dealers in photographic materials, and by THE SCOVILL & ADAMS CO.

THE 5 x 7 HENRY CLAY
Stereoscopic Camera
FOR TRIPOD AND HAND USE.



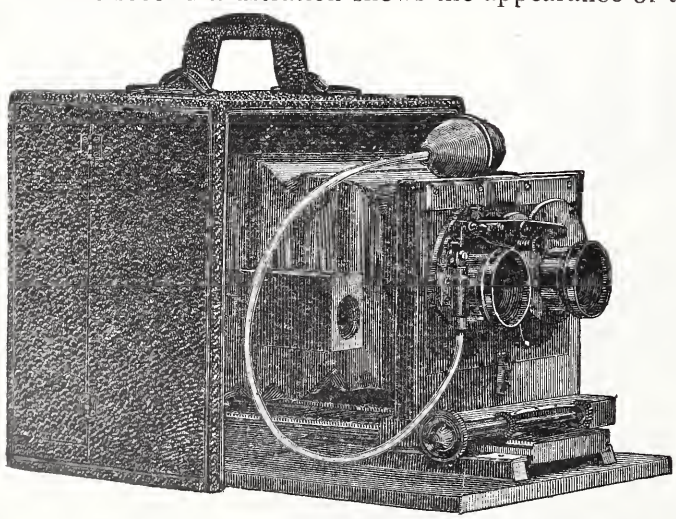
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide ; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

PRICE, with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, ... $75.00

This camera can also be made with vertical sliding and swing front. By means of the former the proportion of sky and foreground may be adjusted ; the latter permits the taking of subjects which may be either above or below the level of the camera and still preserve the lines vertical.

PRICE, with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, and with vertical sliding and swing front, . $80.00

A 5x7 Roll Holder for Transparent Films can be furnished with either of the above forms of this camera for $15.00 additional. This addition would make the case about two inches wider and one-quarter inch higher.

THE SCOVILL & ADAMS CO., 423 Broome Street, New York.

Matt BP Surface PAPER

FOR

Portraits or Landscapes.

It may be worked with Crayon, Pencil, India Ink, or Water Colors much more easily than are Bromides or Solars, and with more pleasing results.

PLAIN PRINTS RESEMBLE PLATINOTYPES.

For Sale by

THE SCOVILL & ADAMS CO.

Felt Backgrounds.

The Scovill & Adams' Plain Felt Background, recently introduced, is a great boon to all Photographers, both Professional and Amateur.

It is made of strong, thick and even stock, and is of an agreeable neutral drab color. It is especially suitable for vignetting. The texture of the cloth absorbs instead of reflecting light, and thus produces soft effects, and agreeable depth in print. The liability of defacement by water stains is obviated.

The prices of these grounds are as follows:

4 x 6 feet	$2.50
5 x 6 "	2.75
6 x 6 "	3.00
6 x 7 "	3.50
6 x 8 "	4.00

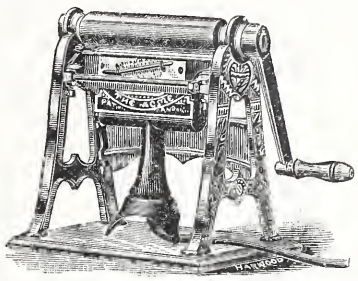
These sizes may be sent by mail on receipt of 35¢. extra.

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PATENT APPLIED FOR.

Acme Amateur Rotary Burnisher.

NOTE.

Quickest Heater in the world.
Saves seventy-five per cent. of gas, oil or alcohol.
No sweat, no smoke, no smell.
Acme Horizontal Thermometer attached.
No blistered prints, uniform results.
Will burnish an 8 x 10 and all sizes under.
Simplest Rotary Burnisher ever made.
One-hand wheel adjustment.
Full Nickel Finish.
Guaranteed in every particular.

PRICE, OIL, GAS, OR ALCOHOL, $15.00.

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ACME BURNISHER CO.,

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"The Developer of the Future."

S. P. C.

Para-Amidophenol Developer

IN ONE SOLUTION.

An eight (8) ounce bottle containing developer sufficient for developing 100 5 x 8 negatives.

PRICE, 50 CENTS.

For sale by all dealers in Photographic Materials

AND BY

THE SCOVILL & ADAMS CO.

Photography on Porcelain made easy.

ASK FOR

LUXOTYPE OPALS.

Ready Sensitized, Printing Out, Toning and Fixing. same as Albumen Prints.

LUXOTYPE TRANSPARENCY AND LANTERN PLATES,

No Development, Printing Out, Toning and Fixing as usual.

LUXOTYPE Toning and Fixing Solution.

LUXOTYPE VARNISH.

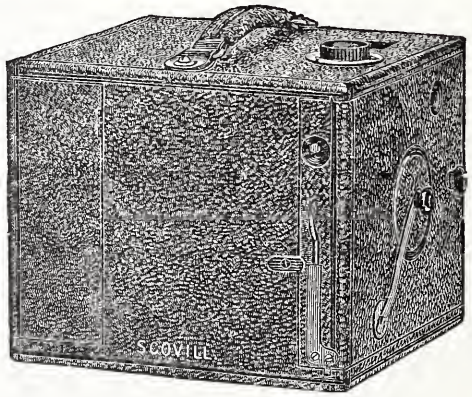
For Sale by THE SCOVILL & ADAMS COMPANY,

AND ALL DEALERS IN PHOTOGRAPHIC MATERIALS.

MANUFACTURED BY

PYROPHOTO COMPANY, 30 First Street, New York.

THE WATERBURY DETECTIVE CAMERAS.



MANUFACTURED BY THE AMERICAN OPTICAL CO.

Timed and Instantaneous Photographs. This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size, It is

The only Detective Camera made for plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

The Recessed Finder shows *the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

The Focusing Scale is beside the Finder, where it may be readily seen and adjusted.

Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders	$25 00
5 x 7 Waterbury Detective Camera, with 2 Double Holders	40 00

FOR SALE BY ALL DEALERS.



Patented July 17, 1887.

STAMP PORTRAITS.

These are the only stamp portraits that are gummed and perforated, and being the exact size of ordinary U. S. postage stamps, photographers and others will find them an interesting novelty in advertising their business, as they can be mounted on business and visiting cards, letter-heads, etc.

We also make a size four times larger than the stamp pictures. Send for samples and prices, which will be furnished on application.

Address

H. A. HYATT,
Sole Agent,
N. E. Cor. 8th & Locust Sts.
St. Louis, Mo.

INGLIS & CO.'S

ENLARGEMENTS IN

Black, Sepia and Water Colors,

HAVE A DISTINCTIVE CHARACTER OF THEIR OWN.

Salient points of our Water Colors are faithful retention of likeness, delicacy of coloring and brilliancy of tone.

2637 STATE STREET, Chicago.

SEND FOR PRICE-LIST.

CLEMONS' NEW MATT-SURFACE PAPER.

SOMETHING NEW UNDER THE SUN—A REVOLUTION IN THE ART OF MANUFACTURING.

After many years of scientific research a preparation for the salting of plain photographic paper has been discovered, by which method the finest printing results are obtainable. The advantages are apparent to all.

I.—Constant use will not discolor the silver bath.
II.—Will produce the finest detail in printing.
III.—Any desired tone may be obtained from sepia to jet-black with less gold than ever before.
IV.—The *"New Matt-Surface"* paper when sensitized will keep fresh for a long time if properly stored.
V.—The price has not been advanced.

For sale by

THE SCOVILL & ADAMS COMPANY,
423 Broome St., New York.

Sample Sheets, by mail, 10 cents each.



137 W. 23d St.,
New York.

Illustrative and Pictorial Work of the Highest Class only by the

PHOTO-GRAVURE,
PHOTO-GELATINE,
HALF-TONE BLOCK,
} **PROCESSES.**

Our processes are suitable for the reproduction of all classes of Art, Scientific and Commercial Work, the price varying according to the process used.

Whilst **Photo-gelatine** printing is marked by the delicacy of its results, the characteristic feature of **Photo-gravure** is its strength and richness. Where price is an object, we furnish editions from **Half-tone Blocks,** but we do not furnish the blocks themselves, as we find that success in this process depends as much on the printing as on the block.

Our Gallery is fitted to produce negatives of all sizes up to 24" x 30" by the best orthochromatic methods.

Also Publishers of the Artistic Periodical,

SAMPLES AND ESTIMATES FURNISHED OF

Catalogues, Souvenirs, Menus, Book Illustrations, Works of Art, etc.



The Rudell Camera,

An Entirely New Magazine Camera,

Carrying 12 4 x 5 Glass Plates.

Most Simple in Action. Never Misses.

Size, only 10¼ x 6 x 6¾ inches.

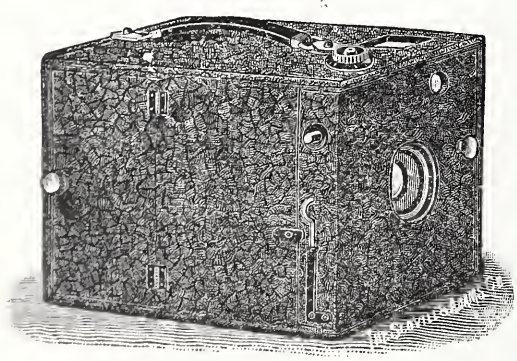
Fitted with a most ingenious Shutter, by which the plate is never exposed except during action.

AN EXCELLENT "DOUBLE COMBINATION" LENS.

Price, only $30.00.

FOR SALE BY ALL DEALERS IN PHOTOGRAPHIC MATERIALS.

THE TRIAD CAMERAS.



When a discovery in photography is announced, it is claimed that the new article will displace everything then in use. These claims are seldom justified. There is generally found a place for the new article, if it has any value, and for the old as well.

For commercial purposes, for instance, such as the reproduction of photographs for illustration, it has been demonstrated that collodion "wet' plates are better than dry plates. For the use of the amateur, on the other hand, dry plates are much better than wet plates. Though many new supports have been tried, the sale of glass dry plates is larger now than ever before. Where only a few pictures are to be made on one day's outing it is likely that the experienced photographer will always use dry plates or cut films.

If he is going away for a summer vacation, or for a trip abroad, and expecting to to make a large number of pictures, he will procure a roll-holder loaded with continuous films. This will save him the bother of developing while he is away from home, and of changing plates; but he cannot well know what results he has secured until he has exposed the entire roll and has had it developed

For those who want to use celluloid instead of glass plates, and are not willing to trust to good luck in the exposure of the complete roll of film, we offer with the "TRIAD" camera a *double* film holder which is very light. If the amateur carries six of these holders (loaded with twelve films) he is well supplied for one day · that is, if he is prudent and aims to get only really good pictures. At night, either in a photographic studio or in his own hotel room, the exposed films may be put away into safe receptacles, and another lot of unexposed films substituted for them.

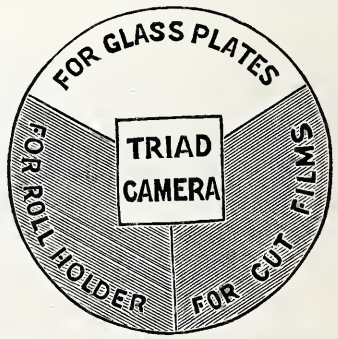
The Triad Camera is fitted with the latest improved Roll-Holder for continuous films, two double holders for glass plates, or two double film holders, if the latter are preferred.

This Camera is fitted with an Instantaneous Rapid Group Lens with easily interchangeable diaphragms —the most satisfactory detective camera lens ever made. It has a finder so constructed that the image is the same as that on the ground glass, though of course it is proportionately diminished in size. Usually the finder in a Detective Camera shows simply the image on the plate, but not its relative size and proportions. The Instantaneous Shutter in this camera is provided with a speed adjuster which works from the outside, and the focusing device and scale are conveniently near the finder. This is very important when one is trying to photograph rapidly moving objects.

For timed exposures use a tripod (easily adjusted to the camera by the plate underneath), open the door at the back, so that the image on the ground glass can be easily seen, set the shutter with the opening opposite the lens, and bring into use the felt cap which fits the opening in front of the camera. By complying with these simple requirements you have a complete camera for timed exposures.

	Price complete.	Price without Roll-Holder.
4 x 5 Triad Camera, with Roll-Holder, two Double Dry Plate Holders, or two Cut Film Holders	$35 00	$25 00
Extra 4 x 5 Triad Double Dry Plate Holders		1 25

Holders for Cut Films, same prices as above.



TRADE MARK.

For sale by all dealers in Photographic Materials and the Manufacturers,

THE SCOVILL & ADAMS CO.

AMATEURS, ATTENTION!



Please remember that in speed and every desirable optical quality no lenses yet constructed can rival

Voigtländer's Euryscope Lenses,

which are made in SEVEN different styles.

BENJ. FRENCH & CO.,

319 Washington St. BOSTON, MASS.

Revised price-List sent on application.

Correspondence solicited.

WILLARD E. PARDRIDGE, President. JOS. M. WINEMAN, Treasurer.

The Illinois Dry Plate Co.

(INCORPORATED.)

MANUFACTURERS OF

Photographic Dry Plates

310-312 West Van Buren Street, CHICAGO, ILL.



The Illinois Dry Plate Co. enter the market with a new plate, which will be found to be unsurpassed in reliability and rapidity.

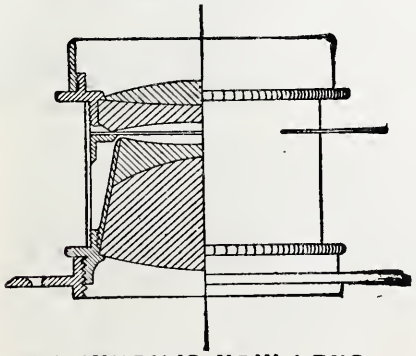
Our factory is equipped with the latest improvements in machinery and with perfect ventilation and regulation of temperature.

We employ skilled and trained workmen, and are prepared to supply the trade with perfect plates.

We make three grades of speed, viz.: Rapid, Extra Rapid and Instantaneous.

A full assortment of Sizes kept in Stock by THE SCOVILL & ADAMS CO.

THE UNRIVALED STEINHEIL LENSES.



STEINHEIL'S NEW LENS.

These Lenses not only maintain their old-established reputation, but continue to lead in the field of progress. Made in six different series for every description of work. Special attention is called to

Series No. II, Patent Antiplanatic, the newest conception in rapid lenses. For Instantaneous Portraits, Large Heads, Full Figure Groups, Architecture, and Landscape. A marvel of illumination, depth and rapidity. No Photographer or Amateur should purchase a lens before testing a Steinheil, Series No. II. See accompanying cut.

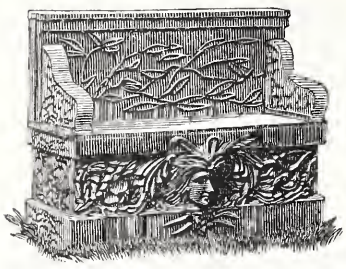
Series No. III, the famous Aplanatic tube, the illumination of which has been increased, and which is recommended for large Portraits, full-size Figures, Groups, Architecture, and Landscape.

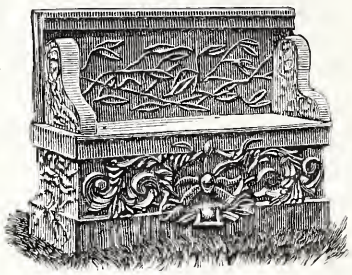
Series No. VI, Wide Angle Aplanat, which has no rival for copying Maps, Charts, Paintings and Engravings. It is the Photo-lithographer's favorite.

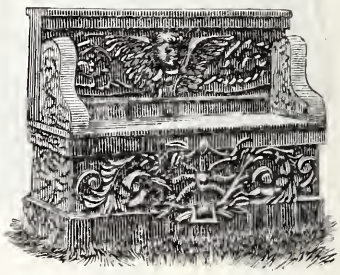
Send for Illustrated Catalogue and Price-List to

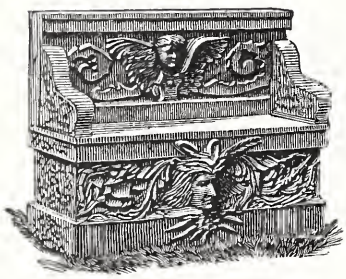
THE SCOVILL & ADAMS COMPANY.

SOMETHING NEW.









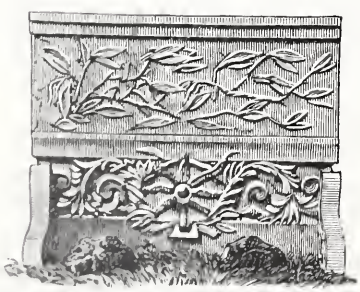
The Eldorado

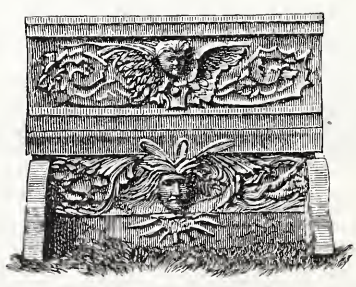
WALL and BENCH COMBINATION.

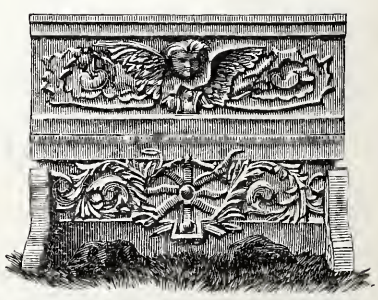
Makes Eight (8) different Combinations.

PRICE, - - - - $20.





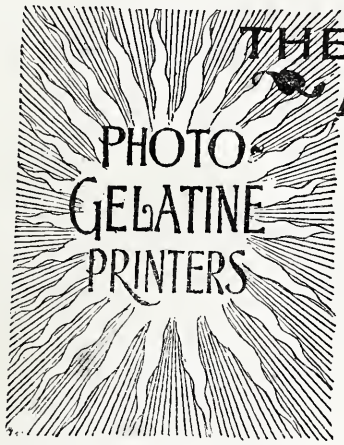




FOR SALE BY

THE SCOVILL & ADAMS COMPANY,

423 BROOME STREET, NEW YORK.



THE ALBERTYPE COMPANY
67 & 69 SPRING ST., NEW YORK.

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WRITE FOR PARTICULARS.

"THE CHIP IS STILL ON OUR SHOULDER."

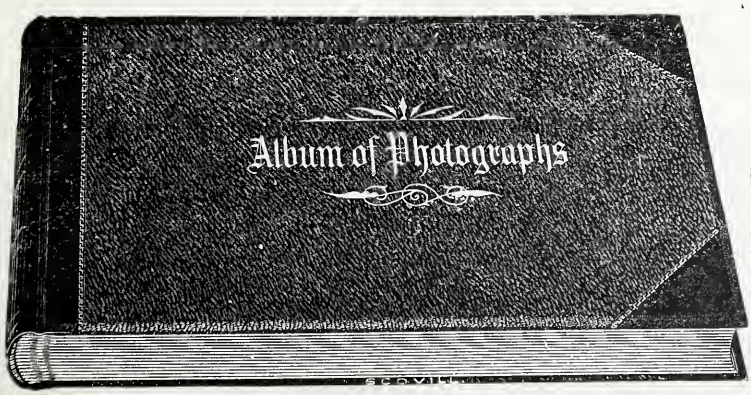
The **Triplex Shutter,** *although exactly the same as when introduced over three years ago, more than holds its own against all newcomers; and its old competitors many times improved.*

None can! None dare! stand before it in a competition, such as the one in which, in 1886, a **Prosch Shutter** *was declared* **the best Shutter in the market.**

Prosch Shutters. - Prosch Storage Flash Lamps.

Send for Circulars and information.

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ALBUMS FOR PHOTOGRAPHS.

Size of Cards.....	6x7	7x10	10x12	11x12	14x17
For Photographs (size)	4x5	5x 8	6¼x8½	8x10	11x14
Plain.....	$1.25	$1.50	$2.25	$2.50	$5.00
With Gilt Lines..	1.25				

Each album has 48 pages, 24 leaves. In them the finest card-board only is used, chemically free from anything that could injure a print.

"We value the Caswell Holder, for which we paid $25, at $100." ADT & BRO., Waterbury, Conn.

CASWELL'S BACKGROUND HOLDER.

SOMETHING NEW UNDER THE SKYLIGHT
SCENES CHANGED IN HALF A MINUTE.

25 sold in April.
25 sold in May.
25 sold in June.
50 sold in July.
100 sold in August

HOW IT OPERATES:

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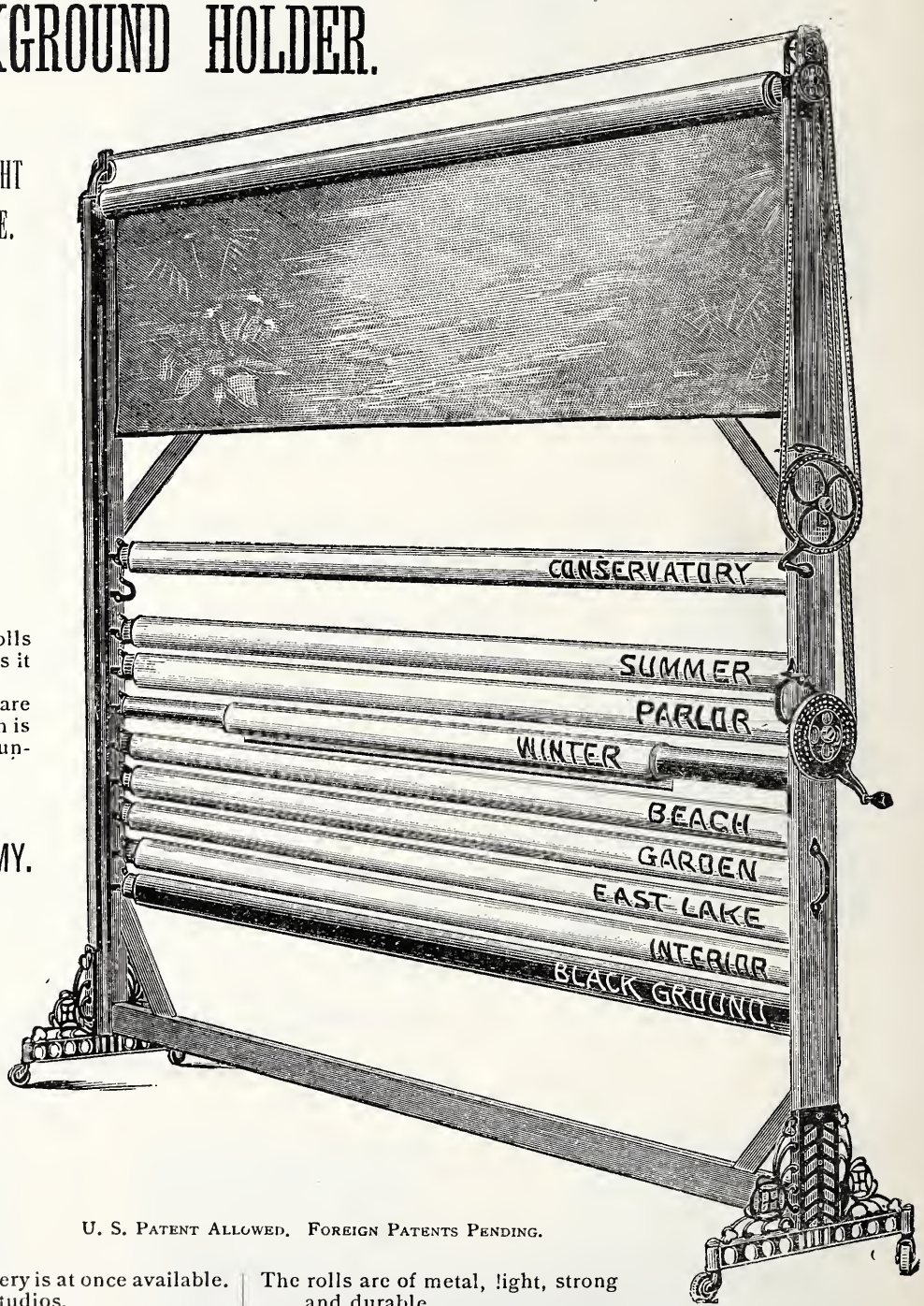
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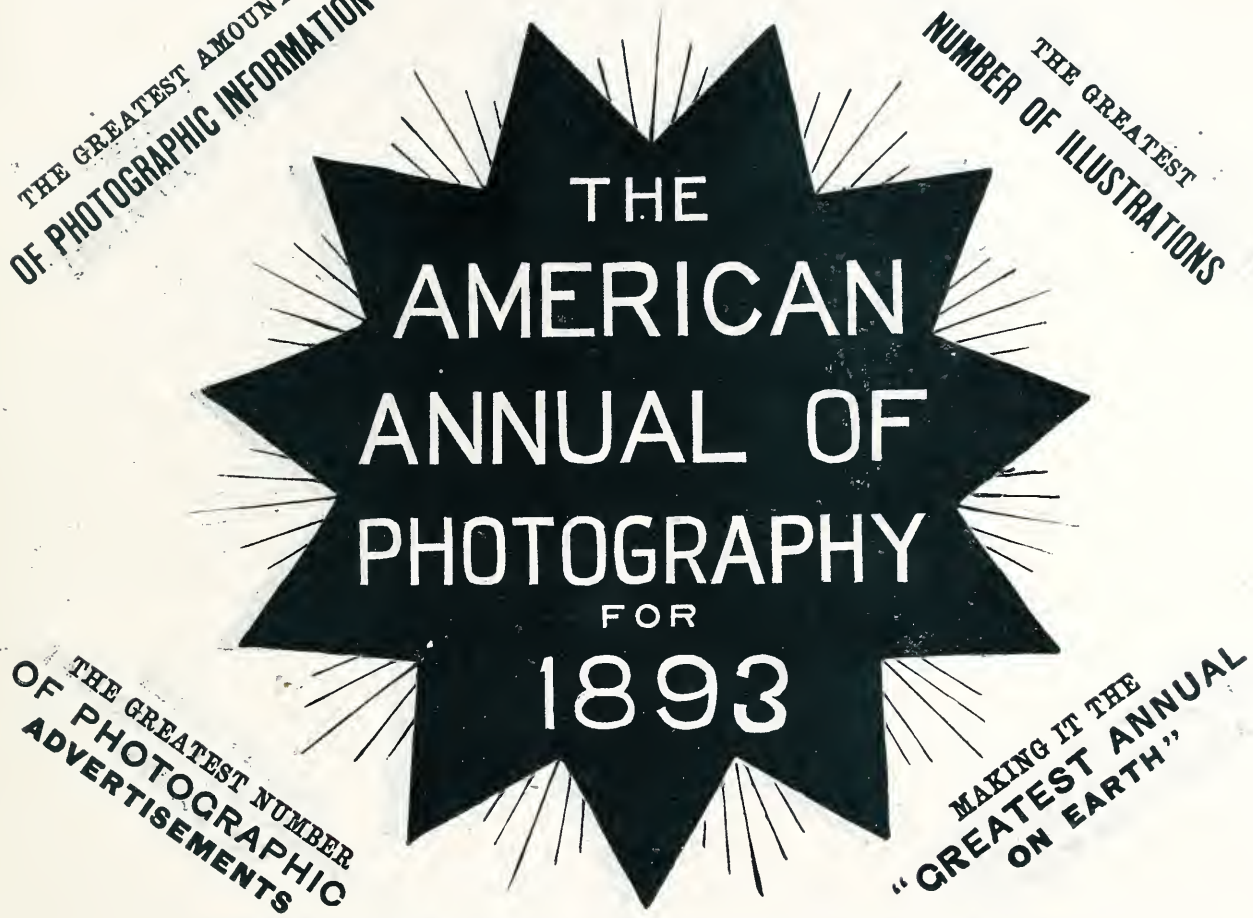
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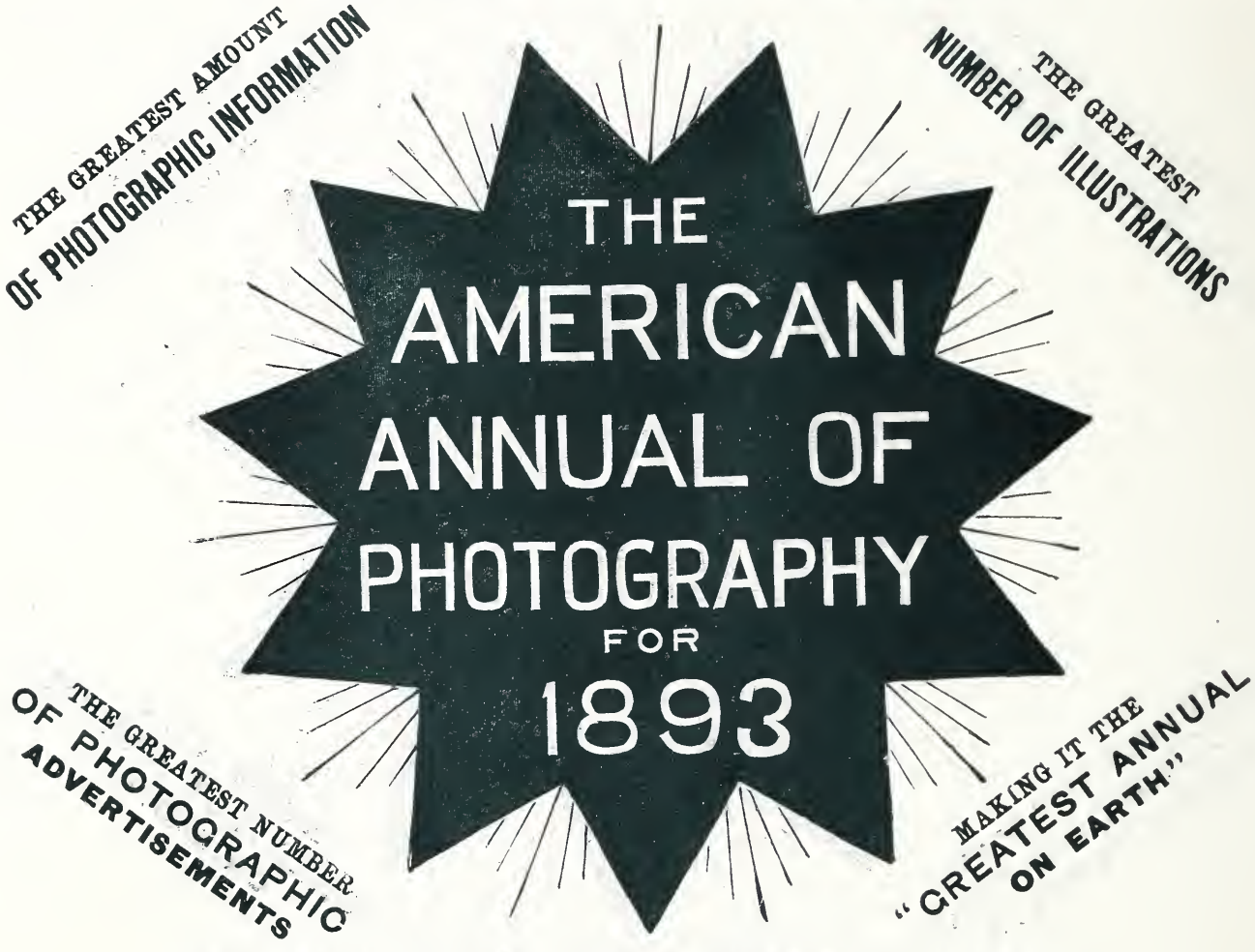
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AT PALENVILLE IN THE CATSKILLS

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VOL. XXII. JULY 22, 1892. NO. 566.

AT PALENSVILLE.

THE pretty landscape picture which serves as a frontispiece this week is from a negative by Mr. Ernest Edwards, President of the New York Photogravure Company, which made the photogravure plate and the print. It is a picture which does not require any word of explanation or description. It speaks for itself. It is a typical landscape in the beautiful country of the Catskills, and was photographed by Mr. Edwards in his usual way.

HELIOCHROMY.

(*The New Process of Mr. Lippmann.*)

NOT a year has passed away since Mr. Lippmann published his wonderful discovery of photography in natural colors, and already, by its improvements, the process enters in the dominion of practicability.

The reader remembers that the process is based on the phenomenon of the interferences—it was explained in THE TIMES by Mr. Canfield and the writer—and that during the exposure-time two screens consisting of small tanks containing one a solution of helianthine to photograph the red and yellow, the other a solution of potassium bichromate which allows to pass the green and red rays but stops the blue, were, the latter after the former, interposited during a certain period of the exposure, the blue rays being allowed to act but only for a few seconds in the last period of the exposure without the interposition of any screen. The photo-plates consisted of an exceedingly thin and homogeneous film of albumen, collodion or collodio-albumen, after the manner of Taupenot, prepared by the wet method. Therefore and on account of the colored screen the exposure-time was very long, and the process required a great ability to obtain perfect results; now, without any screen, the spectrum can be photographed in a few seconds and colored objects by an exposure of five minutes in the sun—by the isochromatization of the photo-film with solution of cyanine into a which the plate is immersed after sensitizing.

We translate from the *Comptes Rendus* the communication made by Mr. Lippmann at the meeting of April 25, 1892, of the Academy of Sciences:

"1. In the first communication I have had the honor to make to the Academy on this subject (the direct photography of color), I said, that the sensitive films I then employed were wanting in sensitiveness and of isochromatism, and that these defects were the principal obstacles to the general application of the method I had imagined. Since then I have succeeded to improve the sensitive film, and, although there remains a good deal to do, the new results are sufficiently encouraging to allow me to communicate them to the Academy.

"2. On the film of albumino-bromide of silver, rendered orthochromatic by azaline and cyanine, I obtain very brilliant photographs of the spectrum. All the colors come at the same time, even the red, without the interposition of colored screens, and after an exposure of from five to thirty seconds.

"On two of these clichés one remarks that the colors seen by transparency are very clearly complementary of those which are seen by reflection.

"3. The theory indicates that the compound colors which adorn the natural objects must be photographed for the same reason as the simple rays of the spectrum. It is, however, necessary to experimentally ascertain this fact. The four clichés I have the honor to submit to the Academy perfectly represent various objects: A glass window with four colors, red, green, blue, yellow; a group of flags; a dish of oranges with a red poppy; a multicolorous parrot. They show that the modeling is rendered with the colors.

"The flags and the bird have required an exposure of from five to ten minutes in the sun and by the electric light. The other objects have been photographed after many hours of exposure by

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diffused light. The green of the foliages, the gray of the stone of the building are very well rendered on another cliché, but the blue of the sky is indigot. Hence it remains to improve the orthochromatism of the plate, and to increase considerably its sensitiveness."

At the conference made at the *Conservatoire National des Arts et Métiers*, Mr. Berget projected, *by reflexion*, the above photographs in color made by Mr. Lippmann and a cliché of the solar spectrum made by Messrs. Lumière, of Lyon, on a gelatine emulsion specially prepared for that purpose: "The colors are superb, and their reproduction on an emulsion film demonstrates the generality of the ingenious method of the learned Professor of the Sorbonne."

To resume, we can now consider as resolved the problem of the photo-reproduction of objects with their natural relief and their colors.

GLEANINGS FROM OLD BOOKS.

Plain Silver Paper Process.

The paper is prepared by slightly impregnating it with a minute quantity of common salt, which may be done by dipping it in a solution of the strength of from 30 to 40 grains to a pint of water.

The silver solution is made by dissolving 1 part of nitrate of silver in 12 parts of distilled water, and then gradually adding strong liquid ammonia until the precipitate at first produced is at length *just* dissolved. The ammonio-nitrate of silver is applied with a brush in the usual manner.

When the picture is finished it ought, as soon as possible, be soaked in water and fixed, . . . etc.

Dr. Alfred Taylor, 1843.

With the exception of the process published by Rev. J. B. Reade on the 26th of April, 1839, *i.e.*, before the discovery of the calotype by Fox-Talbot, this is the oldest ammonio-nitrate of silver process. It is very economical. It was employed by American photographers from the year 1855 to about 1868; and the proofs made at that time have suffered little alteration. The process which was employed is the following:

Dissolve by the aid of heat 1 drachm of the best isinglass in 1 quart of water and add 20 drachms of common salt and 2 drachms of lemon juice. Filter, pass the paper *rapidly* through the solution and when it is dry repeat twice the operation; the paper must be but superficially wetted.

Sensitize by brushing with a solution of

Silver nitrate	35 grains.
Water	1 ounce.

Dissolve and add drop by drop concentrated liquid ammonia until the precipitate which is at first formed is dissolved, then add a few drops of nitric acid and one drachm of alcohol.

The sensitized paper does not keep. Therefore, it should be employed the day it is prepared. It yields with good negatives exceedingly brilliant proofs.

With G. Le Gray's gold toning-bath the tone is black. It bleaches slightly the whites which is an advantage in this process. The solution consists of

Gold terchloride	15 grains
Hypochlorite of lime (bleaching powder)	90 drachms
Water	2 quarts

Diffuse the bleaching powder in the water, then add to auric chloride. The bath is ready for use when colorless. It is too strong and should be diluted to have the action under control. As it is, it answers well for albumen paper.

The proofs can also be toned with platinous chloride as in the process devised by Mr. Lionel Clark, and good black tones obtained.

When enamelled, the prints are really very fine.

Preparation of Albumen Paper.

To the whites of eggs add 2 per cent. of sugar and a small quantity of beer-yeast. Mix thoroughly. Put aside in a warm place until the fermentation which soon takes place has ceased, filter and add per cent.:

Fresh white of eggs	20 parts
Camphored No. 8 acetic acid	2 parts
Chloride of ammonium	2½ parts
Lactate of ammonium	$\frac{1}{10}$ part

After whisking to a froth, let stand for twelve hours, decant and the solution is ready for use.

Float the paper (slightly damp) for two minutes. The first sheets are not very glossy, but by use the albumen thickens and the paper is more brilliant. If the albumen becomes too thick add a little water to it.—(*A German process published in* 1857.)

The paper thus albumenized never blistered.

A Simple Enamelling Process.

1st. Rub a clean glass plate free from scratches, with a little of a solution of wax in ether, or with powdered talc (steatite) and coat with plain collodion to which a few drops of castor oil have been added. Immerse in water to remove oiliness and let dry. Prepare thus any number of plates for future use.

2d. Immerse the proofs in water slightly ren-

dered alkaline by ammonia for a few minutes, and apply them on the collodion film previously wetted.

3d. Squeeze out the water gently to remove the excess of water, air bubbles, and insure contact.

4th. When the whole is quite dry, pass a penknife round the edges of the proof and lift it out by one corner.

The enamelling is now finished and the proofs present a very fine glossy surface....(An Amateur, 1864.)

On Mounting Photographs.

The fact that all the prints stretch, when wetted in one direction, led me to the conclusion that the paper stretched in the direction the pulp has been stretched out or passed through the cylinders; careful experiments have convinced me of this fact.

There is only one way to correct this serious defect, namely, to mount the photograph with a material from which water is excluded. In my judgment india rubber cement answers this purpose admirably, and when properly applied it is very adhesive; besides, it is a protection to the photograph against influences that would affect it injuriously from the back. To apply it properly, coat both mount and print, and when dry pass through a plate or lithographer's press; the latter is the best. Photographs so mounted are entirely free from distortions produced by the expansion of the paper. (F. A. Wenderoth, 1870.)

The distortion Mr. Wenderoth speaks of is also produced in carbon prints and transparencies. "The reason, says Mr. T. G. Hemery, is simple and perfectly easy of explanation. Before development the tissue is, as all know, plunged into water for the necessary swelling, and is then squeezed on to a piece of glass; the supporting paper, of course, swells also, but always in one direction, and, the development proceeding, the carbon dries on its rigid support *as it has swelled*, and does not again go back to its original form.

"The transparencies made on Warnerke's tissue are true, and to prove it you have only to superimpose a carbon transparency developed on glass back again on to the negative, and see if they will fit; but if you get the transparency on Warnerke's tissue the fit is simply fitting up the negative itself."

The Warnerke's tissue above referred to, is made by *the method of using paper* in place of glass published by Mr. W. in the "*British Journal of Photography*" for 1875.

THE PLATINOTYPE PROCESS.

In the last number of The Photographic Times (No. 564), which might almost be called a special Platinotype Edition, so much of it is devoted to this most beautiful of all printing processes, the article by Mr. Duchochois while fully covering the ground from the point of view of the expert, seems just a little formidable and might deter the inexpert. If he will allow me I should like to complement his description of the process in commending it to the veriest beginner from the point of view of its extreme simplicity, not forgetting that Mr. Duchochois makes the same strong plea.

I took it up some eight years ago on the lines laid down by Mr. Duchochois in his paper under present consideration, and was happily successful from the first, and although I have tried all the variations up to date of the process find none so generally agreeable in the results as the original. Many of the difficulties I then encountered, or rather, many of the details of the process leading up to the actual use of the paper in the printing-frame, consuming much valuable time of a busy man to whom the printing of a negative was but an occasional pleasure, may now be done away with.

The paper, ready-sensitized, of the best quality, may be procured at several places in this city, or may be easily procured from the manufacturers in Philadelphia through any dealer in photographic goods. If preserved in an air-tight tin tube with a small bag in the bottom containing chloride of calcium, the paper will keep for a long period. These tubes, specially made for the purpose may also be obtained with the paper. I have made excellent prints from paper three months old, thus preserved, and although the paper, as Mr. Duchochois observes, is exceedingly sensitive to dampness. I have made successful prints on paper sent me from England, ready-sensitized, thus packed in a preserving tube.

Here one detail of the process in preparing and sensitizing the paper may be saved the ordinary amateur. It may be stated here, that prints made on paper which has attracted any dampness in its storing, or even from the printing-frame will give the prints a flat, sunken-in appearance. Hence the importance of the calcium preserving tubes and of inserting a sheet of thin rubber between the paper and the negative in the printing frame.

Another, and to the average amateur, the principal charm, is the ability the process allows of developing the prints in ordinary gas-light, the paper not being very sensitive to yellow light. I have developed many a print, in fact, in merely

subdued daylight, simply taking care not to unduly expose the prints before development by taking them one at a time out of this preserving tube to pass through the developing bath.

This suggests what I found the easiest method of printing and developing. The prints were made at any convenient hour of the day, the paper being already cut to the required size and stored in a tube marked "paper," and as fast as each print was made it was put away in another tube marked "prints." Later, in the evening, and not necessarily the evening of the same day, working comfortably in a well-lighted developing room, I finished their development.

Dense negatives yield the best prints in this process, and when it is intended to be used, the negatives may be developed for greater density than usual Thin negatives will, however, yield good prints, if carefully watched in the printing-frame to prevent printing too deeply, and developed in the oxalate solution at about 135 deg. Fahr.

Although Mr. Duchochois recommends that the developing solution be poured over the print, I found the easiest method was to fill the agate tray about an inch deep, keeping it over a small gas-stove, and regulating its temperature by turning the gas up or down, with a thermometer to note the degree, according to the character of the print, whether desired to develop strongly or weakly, and to pass the print over the solution holding it at its extreme edges by the thumb and forefinger of each hand, and drawing it gently and evenly from right to left through the surface of the bath. By the time the passage of the print was completed it was developed. If a small air-bubble had left anywhere an undeveloped spot it was only necessary to somewhat round the print backwards, placing a finger over the spot to press it forward, and lightly allow it to again touch the solution until developed up to the strength of the rest of the print. In like manner, the deepest parts of the print can be given a little more development by softly passing them two or three times over the bath, bending the rest of the print away from it. With a very particular print I would in such cases quickly increase the temperature of the bath a few degrees by turning up the gas to its fullest power, and thus force out details which otherwise would not have been secured. I may add here that I found I obtained brighter prints by not immersing the print in the bath, but only allowing the printed surface to touch it as I have described.

The only detail of the whole process that might puzzle a beginner is the peculiar feature of the printing in the lack of a completely printed-out image on the paper, when it is really printed correctly for development.

In the process under consideration the image should not be fully printed out to obtain the best results, which are only secured by just the right exposure adapted for the quickest development by the hottest bath, about 175 deg. Fahr., as mentioned by Mr. Duchochois. The safest guide will be found in the *faintest* appearance on the print of any small detail in the *densest* portion of the negative. When this has appeared, *however faintly*, all the remainder of the negative is printed deeply enough, no matter how little is actually visible in the imperfect yellowish-brown image showing here and there. It will all come up when developed.

Freshly sensitized paper, it should be remembered, prints so quickly as to require constant watching. With thin negatives, using three or four frames at the same time, printing in direct sunlight, although under tissue paper, I have been barely able to follow them up to prevent overprinting.

I feel free to say in conclusion, applying the remark equally to what I have just written as to Mr. Duchochois' writing, that the whole process is so much simpler to work than it can be made to read, that it seems impossible to write of it as easily as it is to use it.

H. Edwards-Ficken.

THE DIAPHRAGM.

[Translated for THE PHOTOGRAPHIC TIMES from the *Photo Gazette.*]

(*Continued from page* 368 *and concluded.*)

IN England it has been proposed to adopt an universal numeration; it is the system of the Photographic Society of Great Britain known under the name of *Uniform System*, or by abreviation, U.S. In this numeration one takes for unit an opening equal to the quarter of the focal length, and when the value of the diaphragms in function of focus, as we have given them, is known, it suffices in order to recognize the numbers according to the *uniform system* to elevate the figures to the square and to divide the result by 16 :

The square of	*f*/8	= 64	divided by	16	=	No. 4 U.S.
"	*f*/11.31	= 127.69	"	16	=	No. 8 U.S.
"	*f*/16	= 256	"	16	=	No. 16 U.S.
"	*f*/22.62	= 511	"	16	=	No. 32 U.S.
"	*f*/32	= 1024	"	16	=	No. 64 U.S.

In Germany Dr. Stolze has proposed in 1882 a novel numeration. The square of the focal length is divided by the diameter of the opening rised to the square. For example, given our lens of O^m 24

of focal lens, and our diaphragms numbered in function of focus, we find by the system of Dr. Stolze the following numbers.

$$\frac{0.24\times0.24}{0.03\times0.03} = \frac{0.576}{0.090} = 64 \text{ which corresponds to } f/8$$

$$\frac{0.24\times0.24}{0.21\times0.21} = \frac{0.576}{0.045} = 128 \text{ which corresponds to } f/11.3$$

$$\frac{0.24\times0.24}{0.015\times0.015} = \frac{0.576}{0.022} = 256 \text{ which corresponds to } f/16$$

In 1886, Dr. Stolze improved this method and proposed to divide the square of the focal length by 100 times the square of the diameter of the opening, which give

$$\frac{0.24\times0.24}{(0.03\times0.03)100} = \frac{0.576}{90} = 0.64 \text{ corresponding to } f/8$$

$$\frac{0.24\times0.24}{(0.021\times0.021)100} = \frac{0.576}{45} = 0.128 \text{ corresponding to } f/11.3$$

$$\frac{0.24\times0.24}{(0.015\times0.015)100} = \frac{0.576}{22} = 0.256 \text{ corresponding to } f/16$$

This corresponds to take for unit the diaphragm $f/10$, as advised by the Paris Congress of 1889. T. R. Dallmeyer has recommended a numeration based on the unit $\sqrt{\frac{1}{10}}$. It is a modification of the system of Dr. Stolze; this optician marks the relation of intensity on the larger diaphragm, the others are marked with the number 2, 3, 4, etc., and each number requires an exposure double that of the preceding number, the only exception is for the number marked with X, which necessitates an exposure one half longer.

Goertz, of Berlin, has selected a different numeration. The formula upon which he bases his calculation is $P = \frac{1}{10}(f/d)^2$

P = the exposure time.
f = the focal length.
d = the opening of the diaphragm.

It is the system of Dallmeyer, but the diaphragms are numbered in a different manner, thus :

Nos. of Goertz.	Nos. of Goertz.
4 = $f/6.3$	48 = $f/21.9$
6 = $f/7.7$	96 = $f/31$
12 = $f/11.$	192 = $f/43.8$
24 = $f/16.5$	384 = $f/62.$

C. Zeiss, of Jena, has still adopted another system; the numbers marked on his diaphragms indicate the intensity of light of each opening; he takes as unit of intensity of light corresponding to an opening of which the diameter is equal to $\frac{1}{100}$ of the focal length and which he calls relation of lighting (*clarté*) the relation which exists between the diameter of the luminous beam (measured before it enters the lens) and the focal distance. From this system it results that each diaphragm is marked with a relation which express not its real diameter but the diameter of the beam of light admitted by the diaphragm. The front lens of the lenses being convergent, the luminous beam always has, before entering, a diameter greater than the diameter of the diaphragm which admits it. With the same diaphragm the diameter of the luminous beam will vary for the different forms of lenses, and be so much the greater as the anterior lens will be more convex. Dr. Rudolph, who is the author of this system, considers as a *rationale base* for the determination of the exposure time not the real opening of the diaphragm, but the quantity of luminous rays to which this opening gives a free passage.

If one wishes to compare the lenses of Zeiss, as rapidity, with others, it will be advisable to number the diaphragms of that firm according to the system we have indicated. Otherwise, they may appear less rapid as they are in reality, since, for example, for the anastigmat 1.72 of 195$^{m.m.}$ focal lens, the diaphragm marked 1/7.2 is equivalent to the normal diaphragm $f/8.7$, the 1/9 is equal to $f/10.7$, and so forth But, leaving apart this comparison, the novel diaphragms are in practice as convenient as the ordinary diaphragms, since the openings are doubled from one number to the next one, and the exposure times are inversely proportionate to the numbers of the diaphragms.

Here is the table of the whole series of the diaphragms of the lenses of C. Zeiss :

No. 1 = 1/100	No. 32 = 1/18.5
" 2 = 1/71	" 64 = 1/12.5
" 4 = 1/50	" 128 = 1/9
" 8 = 1/36	" 256 = 1/6.3
" 16 = 1/25	" 512 = 1/4.5

We see by all these different systems of numeration how the operator is embarrassed for comparing between them the lenses whose diaphragms are marked according to these various numerations; to avoid these incertitudes one should, whenever he buys a new lens, mark the diaphragm as we have before explained.

We have said in the beginning of this paper that the diaphragms exert a great influence on the working of the lenses; here are the laws which one should bear in mind :

1st. A small diaphragm gives a less brilliant image than a large one.

2d. A small diaphragm necessitates a longer exposure-time than a large one.

3d. A small diaphragm gives a greater depth of focus than a large one.

4th. A small diaphragm allows the lens to sharply cover a larger surface than a small one.

Since (3d) the diaphragms increase the depth of focus in the ratio of the diameter of their opening, it is, consequently, that this depth of focus varies with the different opening and one will permit us to give here a table indicating the distance at which this depth becomes infinite. This table is due to Mr. de la Baume Pluvinell:

Focal Distance in Centimetres.	Relation of Lighting.											
	f/5	f/10	f/15	f/20	f/25	f/30	f/35	f/40	f/45	f/50	f/55	f/60
5.....	2.5	1.3	0.9	0.7	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3
10.....	10.0	5.0	3.4	2.5	2.0	1.7	1.5	1.3	1.2	1.0	0.9	0.9
15..... ...	22.5	11.3	7.5	5.7	4.5	3.8	3.3	2.9	2.5	2.3	2.1	1.9
20....	40.0	20.0	13.4	10.0	8.0	6.7	5.8	5.0	4.5	4.0	3.7	3.4
25.....	62.5	31.3	20.9	15.7	12.5	10.5	9.0	7.9	7.0	6.3	5.7	5.3
30.	90.0	45.0	30.0	22.5	18.0	15.0	12.9	11.3	10.0	9.0	8.2	7.5
35....	122.5	61.3	40.9	30.7	22.5	20.5	17.5	15.4	13.6	12.3	11.2	10.3
40.....	160.0	80.0	53.4	40.0	32.0	26.7	22.9	20.0	17.8	16.0	14.6	13.4
45.....	202.5	101.3	67.5	50.7	40.5	33.8	29.0	25.4	22.5	20.3	18.4	16 9
50.....	250	125.0	83.4	62.5	50.0	41.7	35.8	31.3	27.8	25.0	22.8	20.9

To be found the distance of the nearest object beyond which everything is in focus with a lens of 0^m 15 of focus; with a diaphragm of which the relation of lighting is $f/20$ we search in the horizontal line this relation and looking in this column we find opposite the figure 15, indicating the focal distance, the figure 5.7 or 5^m 70 for the distance from which all the points situated further on will give a sharp image on the ground-glass.

If the focal distance is not found in the table, or if the relation of lighting is not given exactly as on the diaphragm, one can use the following formula which gives the same result:

$$Pp = \frac{F^2}{n \times 2.}$$

That is to say, to know the depth posterior to Pp of the focus, one rise to the square the focal length F, and divide the square by the denominator of the fraction indicating the diaphragm n multiplied by 2; for example, for the case above cited:

$$\frac{15^2}{20 \times 2} = \frac{225}{40} = 5.60, \text{ hence } 5^m60.$$

One sees that this second method gives very nearly the same result, and, however, a result quite sufficient in practice.

Sometimes it is useful after having focused on the infinite, to know without groping, what diaphragm should be employed to put in focus everything beyond a given distance; this may even be indispensable, for example, in dark interior, which gives hardly an image on the ground-glass. By referring to the table of Mr. de la Baume Pluvinell, we remark that, for each value of f, the number obtained by the multiplication of the distance of the object by the denominator of the fraction indicating the diaphragm, one obtains constant numbers, or very nearly. From this we can deduct the formula: $xd = f2/2$, in which f = the principal focal distance of the object expressed in centimetres; d = indicates in metres the distance of the lens drawn nearer, and f/x = the diameter of the diaphragm in function of focus. We can call xd the *coefficient of sharpness* of the lens, and if we divide xd by the distance of the object in the foreground which we want to be in focus, the quotient will give us the diameter of the diaphragm to be employed.

To avoid these calculations we resume in the following table the value of xd for most of the lenses having from 10 to 40 centimetres focus:

Principal Focal Distance in cm.	10	12	15	18	20	21	22	23	24	25	26
Coefficient of Sharpness....	50	72	112	162	200	220	242	264	288	312	338

Principal Focal Distance in cm.	27	28	29	30	31	32	33	34	35	36	40
Coefficient of Sharpness...	364	392	420	450	480	512	545	578	612	648	800

It suffices to divide the coefficient of sharpness, given in this table, by the distance of the nearest object, to find the diameter of the diaphragm to be employed, example:

The focus has been taken on the infinite and the object beyond which everything must be in focus is situated at 19 metres; the principal focal distance of the lens is 35 centimetres; dividing the coefficient 612 by 19, we find that the diaphragm should not be over $f/32$. This gives a sharpness equal to that of the table of Mr. de la Baume Pluvinell, it is sufficient in ordinary practice, but should the cliché be intended for an enlargement xd then becomes equal to f^2. In this case one should proceed as above and multiply the quotient by 2, to find the proper diaphragm.

If the quotient is not equal to any one of the diaphragms, that which is the nearest to the figure which has been found must be employed; for example, if the division gives 14 as a quotient, as we have not this diaphragm at hand, we employ $f/16$.

Mark once for all on the basis of the camera the place of the plate-holder when the focus is at the infinite, and our formula will permit to take the focus without a ground-glass or a black cloth, by means of a finder; it is sometimes a *sine qua non*, for the ground-glass is fragile, and in photographing an interior it is often impossible to see the image on the ground-glass.

In finishing this article we cannot do better than to cite Mr. Ch. Fabre, who gives the following advice for the use of the diaphragms:

One should always use the largest possible diaphragm. Thus we obtain vigor, relief, and aerian perspective in the proof; but it is only with very good lenses that it is possible to operate in this manner. With small diaphragms sharpness is obtained, but it is at the expense of the essential qualities.

In practice the use of the diaphragms is simple: One takes the focus on some principal object in the foreground. This should be done with a medium diaphragm; then, after examining the image by means of a magnifying glass, to the first diaphragm a smaller one is substituted, which ensures the proper depth of focus. One should reduce the opening of the diaphragm just to the quantity necessary to prevent the object more or less near in the foreground to appear blurred. One should not look for an uniform sharpness if one wants to obtain a picture really artistic. We never have seen a painter give the same importance, the sharpness, even, to the accessories as to the principal subject of the painting. Our eyes do not distinctly see the objects far off when they stop on those in the foreground. The photographer should do as the painter does. Heretofore it was the custom to consider as a photographic perfection the uniform sharpness of the image, but it is not so to-day, and we rightly research the vigor of the image, the relief, the effect, qualities which can only be obtained by the use of large diaphragms.

D'H.

ART AND ART CRITICISM.

If one has the kindly feeling of sympathy for others and their work that they wish others to have for oneself and one's own work, it is safe to say that, other things being equal, one is a competent critic. A physician who, on seeing a wounded or diseased limb, has as his first thought the belief that it must be amputated, has not the quality of mind that will bring eminent success, but if he study to see by what possible course of treatment it can be saved from the knife, he will, other things being equal, be sure of such success.

Such a thought for art and what art really is, doubtless is as necessary to qualify one to judge correctly as in any other work of life. Let us just glance at religious thought for an illustration. Was there a prophet among the Puritan fathers that would have risked his reputation by predicting a gathering of the young people of all sects and shades of belief, for common good, as New York witnessed just a few days past? I trow not. Is not photographic art advancing on the lines that means to art what this means to religion?

Art touches, or should do so, every thought of progress. To be a trifle more specific, let us consider an exhibition of photographic art. If we have carefully followed the thought of Ruskin, have read and carefully observed the growth and progress of the art from Daguerre to Pizzighelli and Ives; if we have the ability to observe all the various points that are visible in each subject on exhibition, it is safe to say that we shall neither use a rule strictly divisible by three (viz., foreground, perpendicular and sky), nor any other hard-and-fast rule by which art shall be cramped; each subject will have its own spirit visible in it if the one who produced it has the true artistic sense or feeling; some may excel in mechanical work, being able to put such a completeness of work into an indifferent thought as to make it a pleasant and pleasurable thing to the eye, and the sense, that most people have more or less of, as they look at a finished work. Others without this ability may yet more or less completely express, more or less rudely, a thought that to many minds is true art. Again there are subjects that not to make beautiful and artistic would require the genius of the awkward squad. When the cult of indistinctness says veil the fresh, bright beauty of nature until it may by the uninitiated be supposed to have gone into fog, there are those who mentally if not vocally protest; yet there are subjects that can justly be so treated. But is there not a danger that we become pedantic instead of liberal? Is not art cosmopolitan? truly and liberally so? And is not photographic art broadening and outreaching in its progress? teaching also where pallet and brush has not entrance? If the common things of life can be beautified to the many, is it not better not to try to formulate a cult or try to prescribe exact rules for the learners to follow? but to let the individual mind be led by as limited a number of rules as is consistent, getting now and then a dash of individuality that, if it be not offensively so, will be true progress.

Anonymous.

Correspondence.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: Several years ago an effort was made to organize a camera club in this city, but after a short existence it died a natural death. Last winter several amateurs who believed the city contained material for a first-class camera club got a few of our influential citizens who practised photography interested, and succeeded in organizing what we consider a first-class club. We have an elegant suite of rooms, with one of the best skylights in the city. Our dark-rooms and facilities for working are very complete. We take pleasure in extending the use of the rooms to members of other clubs visiting the city. The officers are: President, W. M. Tenney; Vice-President, W. Channing Whitney; Secretary, A. L. Eidemiller; Treasurer, W. C. Porter.

Yours truly,

A. L. Eidemiller,
Secretary.

Notes and News.

L. Alman & Co. has succeeded L. Alman, Photographer of New York City.

C. W. Nichols, of Rutland, Vt., has sold out his photographic gallery.

Luman A. Grant, of Syracuse, N. Y., sustained a considerable loss by fire.

Odell & Thomas, Photographers of Logan, Utah, lost $1,800 worth of property recently, by fire, of which $1,000 was covered by insurance.

Charles Lawrence, the enterprising dealer in photographic goods at 102 E. Douglass Ave., Wichita, Kansas, arrived in New York last week, and gave us a pleasant call.

The French Government has bought from Sargent, the American artist, his painting "La Carmencita," which is now at the Parisian Exhibition of the Champ-de-Mars.

To Prevent Unsightly-looking Bottles.—Most photographers have an experience of the untidy and unsightly appearance of the bottles on their shelves, caused, after pouring, by the running down of a portion of the contents over the sides of the vessel, and crystallizing there, or perhaps sullying the label. According to a correspondent of the *Chemical News*, this can be entirely obviated by simply painting the lip or rim with melted paraffin. Care should be taken to cover only the side of the lip—none should be put on the upper surface. It can be accomplished most easily by using a small hog-hair brush, and a wax of low melting point, such as is used for embedding sections. It will be found that, besides preventing the solution trickling down the outside, it enables the reagent to be delivered in single drops, without resorting to the plan of partially withdrawing the stopper. Those who have vainly endeavored to deliver drops from the mouth of a bottle will appreciate the advantage of the latter recommendation.

The Aerial Graphoscope.—At a recent meeting of the Physical Society was exhibited, as a "new instrument for showing the effects of persistence of vision," an apparatus under the above title, which, we presume, is the same instrument (or a similar one) as that exhibited at the last exhibition of the Photographic Society of Great Britain in Pall Mall. It consists, as visitors to the exhibition will remember, of a narrow wooden lath mounted on a whirling machine so as to be rapidly rotated in its own plane. When rotated it presents the appearance of a nearly uniform screen or disc, owing to the persistence of impression. For exhibiting the latter effect the instrument is, of course, a useful, if cumbrous, affair; but for practical lantern projection it is, as we have before pointed out, practically worthless. The loss of light is, perhaps, ninety-five per cent., and there is the further disadvantage of this ninety-five per cent. going to illuminate the rest of the room, though, of course, it would be practical to place a black-velvet screen behind to absorb this; but then the *raison d'être* of the machine would be gone.—*British Journal of Photography.*

CONCERNING BRADFISCH'S "PERFECTED" ARISTOTYPE PAPER.

ANY one having any trouble with the Bradfisch & Pierce Perfected Aristotype Paper are invited to note the following suggestions which have recently been issued by Messrs. Bradfisch & Pierce, 72d and 73d Streets and 7th Avenue, Bay Ridge, Brooklyn, N. Y.:

1st. Mail us, carefully protected from damage, two or three sheets of the paper, *and put your name or initials on the back of them* for identification.

2d. Also send sample of *your finished print*, showing trouble complained of.

3d. Send two prints, *not toned*, so we can see the paper as it appears at that stage.

4. State whether you followed *our directions*, or use some other formula.

5. Give *fullest particulars* when writing, and we will *put you* on the *right track*.

6. State emulsion number as stamped on package.

USUAL CAUSES OF FAILURE.	REMEDY.
Too light printing.	Print paper till the shadows are deeply bronzed.
Too little washing, and not separating prints during the washing.	Wash thoroughly before toning, throwing off the first waters quickly, and continuing until all milkiness disappears, handling prints separately.
Toning too far.	Tone till prints are of a cherry shade.
Not covering prints with the fixing solution, and not separating them during the fixing.	Wash in two changes of water and put in the fixing and hardening solution, seeing that prints are covered with the solution, and prints handled separately.
Insufficient washing.	Wash for two or three hours.

Mount and finish as Albumen prints.

Avoid combined baths, or you will have yellow prints.

P. S.—The acid sulphite recommended is supplied by stock dealers, and is known to chemists as Bi-sulphite of Soda.

A NEW ERA IN COLOR PRINTING.

An important field has recently been developed for the type-printing press, that is, color-work from half-tone plates.

Heretofore lithography exclusively covered the field of fine color-work, although attempts where long ago made by ingenious engravers and printers of nearly all civilized countries on the globe to execute artistic color-work, such as is noted on fine chromo-work, on the type-printing press. In its early state xylography and metal plates took the lead; later, grain-work on zinc followed or was used in combination. Only those met partially with financial success, however, who opened a market for their work through their own publications. The process being too expensive and the effects lacking the softness of chromo-lithography, the field within which it was operated was very limited.

Lithographers had monopolized the chromo field. They produced most remarkable results, and with their trained and experienced force of artists, engravers, transferrers, color-mixers and pressmen, it often seemed impossible to the enthusiasts of the printing press that there would ever be a show for something more worthy than what is known in this country under the head of can labels and like work of little better character.

Still there were a number of firms, artists, engravers, and printers, in Europe and in America as well, who upheld the idea of future success, and there is no question that their early labors gave the impulse to the results which we now obtain by the assistance of photography through the half-tone process for color-work on the printing press.

Results lately produced in Paris, Berlin, and New York, almost within the same period of time, show remarkable improvements in the production of feasible plates for chromo-work on the type-printing press, still there are mountains to be climbed over yet before we can speak of a technical and practical success. One point has been gained, however, which is eminently in favor of the new method, since it has been thoroughly demonstrated through the latest publications that there is a possibility for fine and practical results by aid of the relief-process plate and the printing press.

Artists and engravers are alike anxious to advance color-plate making, and while in this direction there is, so to speak, a daily progress on record, the printers will have to do their part in studying the printing of chromo-work, teaching their employees, and equipping their press-rooms and plants with the very best of machinery. Only then, and no sooner, the new achievement will become a prosperous side-issue for the printing business, and this it will be for those printers, especially, who shall be able to overcome through a thorough, methodical study, and through wise and energetic management, the many difficulties which will present themselves in chromo-printing.—*Black and White.*

MICA.

As it has often been suggested that this mineral might serve for photographic purposes in lieu of glass, the following particulars, gathered from the new journal *Stone*, will not be without interest to our readers:

There are several distinct varieties of mica, all characterized alike by a very perfect basal cleavage whereby they split readily into thin sheets, but differing in color, elasticity, and composition. The most prominent varieties are (1) the white colorless variety, muscovite; (2) the white to yellowish-brown or brownish-red variety, phlogophite; (3) the black and frequently opaque varieties, biotite and and lepidomelane; and (4) the pink lilac or rose-colored lepidolite. Of these only the white variety muscovite is, excepting as a rock constituent, of economic importance, and need be described here.

Occurrence.—The micas are among the most common and widely disseminated of minerals, occurring in irregular shreds or six-sided tablets in rocks of all kinds and of all ages. They are particularly characteristic of the acid crystalline rocks, both eruptive and metamorphic.

The white variety is, however, much the more restricted in its distribution, and it is believed is confined wholly to the older acid rocks of the granitic or gneissic groups.

The prevailing form of the micas is that of small irregular flecks, from a mere point to a fourth of an inch in diameter, disseminated throughout the mass of a rock. In the younger eruptives, in limestones, and in granitic veins it not infrequently shows good crystallographic forms hexagonal in outline, which are easily recognized as mica from their property of splitting readily into six-sided thin sheets.

The white mica, or muscovite (sometimes called isinglass) of commerce, is derived wholly from pegmatitic or other coarse granitic veins in granite and gneiss. Besides mica, the chief constituents of the veins are quartz and feldspar, though there not infrequently occurs a pleasing variety of minerals, as beryl, tourmaline, apatite, cassiterite, etc. Indeed, such veins are the mineralogist's most faithful fields, both as regards abundance and variety as well as perfection of crystalline form.

Properties.—The distinguishing characteristic of muscovite, and that which gives it its chief value, is its property of splitting readily into thin, transparent, tough, and elastic sheets. It is but little acted on by heat, though gradually becoming brittle on prolonged exposure to high temperatures.

Uses.—The chief use of mica is in the form of thin sheets for stoves and furnaces. For this purpose it must be clear and free from bad spots, cracks, or blemishes of any kind. The most desirable color is stated to be wine red. Of late years there has arisen a considerable demand for mica in the form of strips some eight inches long by one inch wide for insulating purposes in the manufacture of electrical apparatus. The qualities essential for these purposes are toughness and freedom from iron. There is a considerable and increasing demand for ground mica, which allows of the utilization of the scraps, which must otherwise go to waste. At present eight grades are prepared, the coarsest being used to give a spangled effect to fancy grades of wall-paper, while the finest is used in producing a uniform metallic white surface on the same. The intermediate varieties are used mainly in the manufacture of lubricants for heavy machinery.

Preparation.—Mica occurs in sheets of all sizes up to two or more feet in diameter, and from the fraction of one to several inches thick. The larger sheets are utilized mainly for sheet mica, and for this purpose the blocks, after being taken from the quarry, are freed from all gangue material, split to such thinness as to trim readily, and, by aid of patterns, cut to standard sizes, the value of

the cut sheets increasing very rapidly in proportion to their size. There is a great amount of waste in this process, and it is stated not above eight or ten per cent. of sheet mica is obtained from the block mica thus treated. The waste material or scrap from the trimming, and, in some cases, the entire product, if sufficiently clean and free from gritty substances, is ground. This process, owing to the toughness and fissility of the mineral, is one of considerable difficulty, and, at date of writing, not more than two or three firms in the entire country are prepared to do the work.

Sources.—More or less mica has from time to time been produced by nearly every State bordering along the Appalachians, though the mining is nearly always more or less spasmodic and intermittent. Frequently mica forms a product of the feldspar and quartz mines, though the amount thus obtained is comparatively small. New Hampshire and North Carolina are at present the chief sources in the United States. From forty to fifty tons are annually produced, valued at from ten cents to five dollars a pound, according to quality. The chief foreign sources of mica are Canada and India.

PHOTO-ETCHING UPON COPPER PLATES.

UNDOUBTEDLY one of the finest reproduction processes which we have, which is of photographic origin, is that of heliogravure, or, as it is more popularly called, photogravure. It seems that some modern writers make the distinction between the two names to be as follows: photogravure for half-tone intaglio plates, whilst they reserve the term heliogravure for surface printing blocks. In this article I intend to treat only of the former.

The process is roughly this. A relief negative in gelatine is placed in contact with a polished copper plate which has been previously coated with a "ground," the object of the ground being that the copper shall be in part protected from the biting fluids used in the next part of the process, an uneven surface or "tooth" being thus obtained which holds the ink in printing. The plate is then placed in an etching bath, and this acts by penetrating the film, and thus acting upon the copper in inverse ratio to the proportion of gelatine relief on the surface; thus the unprotected parts of the copper are first attacked, then as the fluid penetrates first the half-tones of the negatives, and finally the densest portions, they are etched in turn. The etching being completed, the relief negative is cleared off the surface of the copper, cleansed, when the image is found to be bitten into the copper to a slight extent, sufficient to hold a small quantity of ink, which is applied with a dabber, and then partially wiped off, leaving the portions representing the high-lights of the picture as clean copper surfaces.

The details of the process are these: A good negative having been obtained, a transparency is made by any process which is most convenient, wet-plate or carbon giving the best results; from this transparency a negative is made in carbon; standard brown of the Autotype Company is the best color to use. The copper-plate is next "grained." This is best done with resin, either put on in solution from a fine spray, or in a dusting box, which is a box containing finely-powdered resin. This resin is agitated, and whilst the interior of the box is filled with an atmosphere of fine resin dust, the plate is inserted face upward, and this dust is allowed to settle on its polished surface. The plate is then heated to fix the resin to the plate; the resin is allowed *just* and only *just* to melt, which point is known by a dark wave passing over the film, as viewed by the reflected light of a candle or gas jet. Presuming the grains of resin to be spherical, it will be seen that the desired result is that the spheres shall only be melted on the surface tangential to the copper, thus protecting the copper at a point, but having an interspace between it and the tangent point of the next granule. This having been done, the plate is cooled, and the carbon negative previously made is removed from the printing frame and soaked in water until the film straightens, after the first curling; it is then placed in contact with the grained copper plate with a squeegee; after having been allowed to partially dry under pressure, it is developed as usual with hot water, then soaked in alum, 1 to 20, for about twenty minutes, rinsed, and allowed to dry *horizontally*. The edges and back of the plate are then protected with a resist varnish, which should be a quick drying one. (I use Bates' black and benzole, equal parts.) When this is dry, the plate is ready for etching. Perchloride of iron is the best biting fluid to use. It is best to use this of different strengths. I use 75 per cent, 50 per cent., 30 per cent., and 20 per cent. baths; and here is an apparent anomaly—the strongest bath has the least action, for it so tans the gelatine of the relief or temporary image, that it allows no mordant to reach the copper, but as the latter becomes in the future baths more diluted, and the gelatine swells more, the mordant penetrates, and so etches the copper.

The biting being finished, the tempory image is cleaned off with hot solution of washing soda, which at the same time prevents further action of the perchloride by converting it into carbonate. The plate is then cleansed with French chalk and methyl alcohol, which removes the copper salts formed during biting, and at the same time cleans off the resist varnish. The plate is now ready for pulling a plate from. But it must be remembered that every pull detracts from the quality of the plate, as the relief is but slight, and the copper soft. If many prints are desired, the plate ought to have an electro deposit of steel put upon it. A pull can now be taken as follows: The plate, after having been warmed and inked with a thin ink which is dense in color, and the surface partially cleaned with the palm of the hand, leaving the ink only in the half-tones and shadows, whilst the high-lights are quite cleaned, is warmed again, but allowed to get *cold* before placing on the bed of the press on which is a sheet of plate paper. A sheet of India paper having been previously dampened is then placed upon the plate, and the three or four layers of blanketing are superposed and the plate passed through the press, when the print is practically finished; the glaze given by passing under such pressure is got rid of by soaking the prints for a day or two in a dish of clean water.

The printing is undoubtedly the most difficult part of the process, and I have not by any means satisfied myself with my own results, but I put this down partially to trying to make shift for a copper-plate press with a roller burnisher, on which I have very great difficulty in getting the pressure even.—VICTOR A. L. CORBOULD, *in The British Lithographer.*

PHOTOGRAPHIC PROCESSES WITH MANGANIC SALTS.

(*Concluded from page* 368.)

III.

The manganic phosphate is obtained by treating the peroxide of manganese with concentrated phosphoric acid in excess. One obtains a syrupy liquid of a deep amethyst violet color which solidifies in cooling and dissolves in water. At about 250 deg. C. the dioxide of manganese loses a part of its oxygen, and is transformed into sesquioxide which combines to phosphoric acid.

The reaction more rapidly and regularly takes place with the hydrated peroxide of manganese, This latter is obtained by precipitating a solution of manganous sulphate by a solution of chloride of lime in excess. The precipitate is collected on a filter, washed, then heated with four times its weight of phosphoric acid at 60 deg. B. When the mass is violet, or ceases to heat, then allow the produce to cool completely before dissolving in distilled water. If the water is added before cooling a partial decomposition with formation of a violet-gray substance takes place.

The manganic phosphate is soluble in cold water, not acted on by a great excess of this liquid. However, the solution is discolored by time, or when heated it deposits the violet-gray substance of which it has been the question in the foregoing lines. It precipitates gelatine as all the manganic salts. The reducing agents decolor the manganic phosphate in converting it back into a manganous salt or precipitate the sesquioxide of manganese. Potassa and the alkalies act in the same manner.

We have remarked that the powerful oxidizing properties of the manganic salts permit to transform a great number of organic substances into coloring matters. It is thus that they act on the lencobases, the salts of monamines, of diamines, of amidophenols, on the homologues of these bodies, etc.

When, by oxidation, these reagents can give insoluble coloring matters which are precipitated as they form on the substratum of the sensitive surface in the parts where the latter has not been reduced, the parts reduced by light precipitating no coloring matters, one can obtain photographic proofs. To cite only one example: The salts of analine (hydrochlorate, sulphate, etc.) are transformed into analine black after having given rise to products of intermediate oxidation, emeraldine, azurite.

We have utilized these properties in the process we will describe further on, and it is by their agency that we have been able to produce proofs of a great variety of coloration.

When a sheet of gelatinized paper is floated for a few moments on a concentrated solution of manganic phosphate prepared as it has been said above, the film of gelatine takes an intense red tint which keeps if the paper is desiccated in the dark. Exposed to the solar rays, this paper bleaches in consequence of the reduction to the minimum of the manganic salt, but in this condition the substance is very little sensitive to light. We have been able to increase this sensitiveness by adding to the phosphate solution certain reducing agents such as organic acids. Tartaric acid at the dose of 1 gramme for 100 grammes of manganic solution is that which has given the best results. The sensitiveness increases as the proportion of tartaric acid augments.

Prepared without this reducing agent, the paper gives an intense proof only after an isolation of forty-eight hours. The addition of 1 per cent. of tartaric acid permits to reduce the exposure time to two hours. A greater quantity of tartaric acid does not seem to have any more influence on the increase of sensitiveness.

This paper exposed under a diapositive gives a positive proof; it is decolored on the parts corresponding to the transparent parts of the screen, while the manganic salt remains unaltered under the opaque parts of the cliché. When the ground is well decolored, a brownish image appears on a white ground. Then the proof should be treated by a reagent capable of accentuating the image and of fixing it in the meantime.

Amongst the substances which seem to us of fulfilling these conditions we must cite the hydrochlorate of paraamidophenol which is oxidized under the influence of a manganic salt in forming a insoluble brown substance. Immersed in a 5 per cent. solution of this hydrochlorate, the image is developed and fixed in a few seconds. It then only remains to thoroughly wash the proof.

The inconveniences of the process we have succinctly described are numerous.

1st. The manganic sulphate can be employed only in very acid solution. When one tries to neutralize the liquor, there occurs a precipitation of a substance not yet studied. The phosphoric acid in excess prevents the complete desiccation of the paper.

2d. This dampness of the sensitive substance facilitates its reduction in darkness; it can be kept for only a few days.

3d. However the attempts made to increase the sensitiveness, it requires at least two hours isolation in full sunshine to obtain good proofs.

From the above considerations we conclude that none of the manganic salts prepared until now seems to be practically useful in photography.

Therefore we have directed our researches in another way and attempted to obtain salts more sensitive than the phosphate.

We have succeeded to prepare new manganic salts which have not all these inconveniences.

Their great sensitiveness, the variety of colorations of the proofs, the simplicity of the manipulations, the cost of which is much reduced have permitted to devise a series of photographic processes which are exceedingly interesting.

We will describe these new processes in our next communication.

August and Louis Lumière.

(*To be continued.*)

A LIFE-SAVER.

She: I would like to have a photograph of my hand taken.

Photographer: Yes, it's quite the fashion.

She: Oh, not just that. But Chollyboy has asked me for my heart and hand and as I can't give him my heart I want to give him my hand just to keep him from committing suicide!

The Editorial Table.

Photography, by A. Brothers, F.R.A.S. London: Chas. Griffin & Co., 1892.

This is a large 8vo. containing 365 pages, well printed on good paper and illustrated, besides the woodcuts in the text, with pictures showing the results of many of the processes described.

In the introduction which contains four chapters the author commences by giving an historical sketch of photography; then proceeds by two chapters, one on the chemistry of photography, the other on its optics. We find these subjects well treated and forming an excellent introduction—though elementary—to the study of photography. In Part II. the processes are described in an alphabetical order. They are succinctly treated, and, however, all the necessary information is given in a methodical and clear manner. Part III. contains a description of the apparatus and Part IV. that of the materials used, in which will be found many good formulas for compounding the photo-preparations.

The weak points in this work are the descriptions of the photo-mechanical processes, but this should be expected in a book of this size. Photography is now an art embracing so many industrial applications that only in a work of many volumes could a complete instruction be given.

On the whole "Photography" is a good work, which we recommend to our readers.

Les Positifs sur Verre. Théorie et practique. Les positifs pour projections. Stéréoscopes et vitraux. Méthodes operatoires. Coloriage at montages par H. Fourier. Large 8vo. Paris, 1892: Gauthier Villars et fils.

This book, profusely illustrated, teaches how to obtain transparencies for the decoration of windows and those, now in general use, for projections. The various processes are well and completely described, and all the indications to avoid failures or to remedy them are explained.

The work is well written, and though giving the theory of each process, it is especially the practical part which predominates.

Record of Photographic Patents.

477,243. Photographic Roll-Holder. Frank A. Brownell, Rochester, N. Y.

477,337. Photographic Film-Holder. Thomas Sault, New Haven, Conn.

477,486. Photographic Developer. Momme Andresen, Berlin, Germany.

477,588. Camera Shutter. Asbury Barker, Peekskill, N. Y.

477,728. Photographic Paper-Holder and Cutter. Thomas E. Wood, Kalamazoo, Mich.

477,696. Photographic Plate-Holder. Arthur E. Paige, Philadelphia, Pa.

TRADE MARKS.

21,409. Photographic Paper. A. Schwarz.

478,335. Photographic Plate Carrier. Charles Henry Lohman, Chicago, Illinois.

PHOTOGRAPHIC LORE.

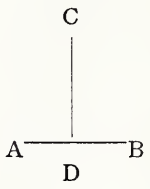
"Kissing a young lady's lips twice is what you call retouching."

"And when she slaps you twice on the face for it you call it duplicating."

Queries and Answers.

301 O. P.—How can I find the angle of view of a lens?

301 *Answer.*—Draw on a sheet of paper a straight line equal to the horizontal dimensions of the plate upon which the negative is taken, 12 inches for a 10 x 12 plate, for example, and erect upon its centre a vertical line of the length of focus of your lens.



A B represents the length of the plate, and C D the length of focus. Draw lines from C to A and B, and the angle thus made, or A C B, represents the angle of view, easily measured by a protractor.

302 KITTY.—Will you give me a few points of how to take an outdoor group?

302 *Answer.*—Outdoor groups should be taken towards evening, or when the light is not very bright. Arrange the group on the shady side of a building, on the slope of a hill, or near any other object offering protection from direct sunlight; compose the group in pyramidal form, work with a plate of moderate sensitiveness, but give ample time of exposure.

303 SUMPTER STREET.—Please to describe how ammonio-nitrate of silver for printing on matt-surface paper is made, and how strong the paper must be salted?

303 *Answer.*—Dissolve 1¼ ounce of nitrate of silver in 12 ounces of water, set aside 3 ounces of the solution, and add to the 9 ounces so much of stronger aqua ammonia till the brown precipitate formed is re-dissolved, not more. Finally pour the 3 ounces of solution set aside into the rest, when a white precipitate forms, which is dissolved with glacial acetic acid. Be careful not to add acid in excess.

This solution produces prints of brilliancy and intensity.

The salting solution should be 300 grains of ammonium chloride in one gallon of water. The addition of a little gelatine or boiled starch gives firmness to the paper, without influencing tone or quality of the print.

304 R. R. R.—What is meant by astigmatism?

304 *Answer.*—A defect of vision in which the light rays are not brought to one focus, but converge at different distances, so as to form two linear images at right angles to each other. Photographic lenses, especially those covering a large field of vision, are occasionally found to be astigmatic.

305 ETHEL B. N.—Can you give me a simple formula of toning and fixing chloride of silver gelatine emulsion paper in separate solutions?

305 *Answer.*—Borax or sodium acetate enough to neutralize a ter-chloride of gold solution, 1 grain in 8 ounces.

Wash the prints before toning and fix in hypo solution, 1 in 10.

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AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

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W. I. LINCOLN ADAMS, Editor.

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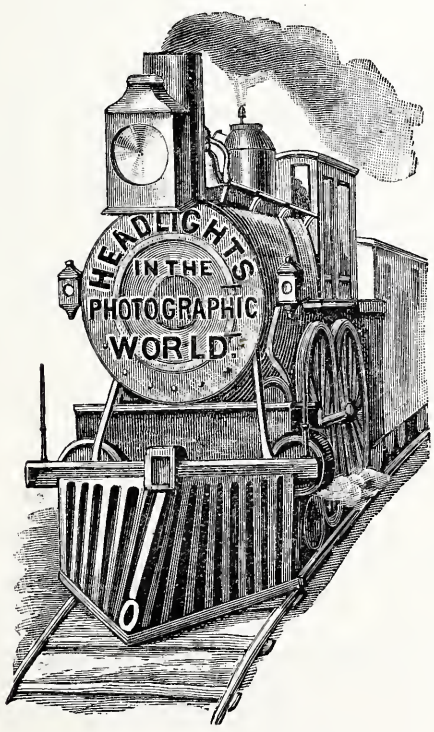
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Commercial Intelligence.

THE BP MATT-SURFACE PAPER.

SAN FRANCISCO, July 6, 1892.

Messrs. BRADFISCH & PIERCE,
Bay Ridge, Brooklyn, N. Y.

Dear Sirs:—At the regular meeting of the California Camera Club held in its rooms last night, acting for the House Committee, I reported to the members the results of my efforts with your paper and showed samples of the work. I am speaking now of the Matt-Surface paper. I have not yet found time to try the other kind, and the gentleman to whom I gave the paper and who was to report his results is out of town at present. The effects obtained with the Matt-Surface paper approach Platintype in beauty, and no more, to my mind, can be said. Soft, delicate, velvety lines, the prints are indeed artistic in their nature, and "things of beauty."

After the season closes and when the members begin to print up their negatives, you will perhaps hear from us.

Very truly yours,
CHAS. ALBERT ADAMS,
For the House Com. California Camera Club.

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Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper..... 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English). Vols. I. and II. (except No. 18), 1890, 1891.

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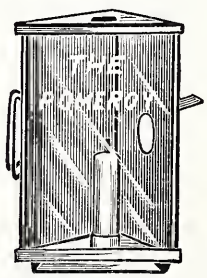
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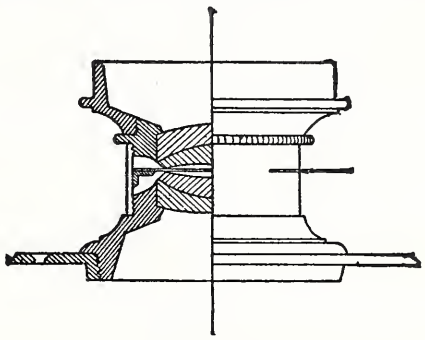
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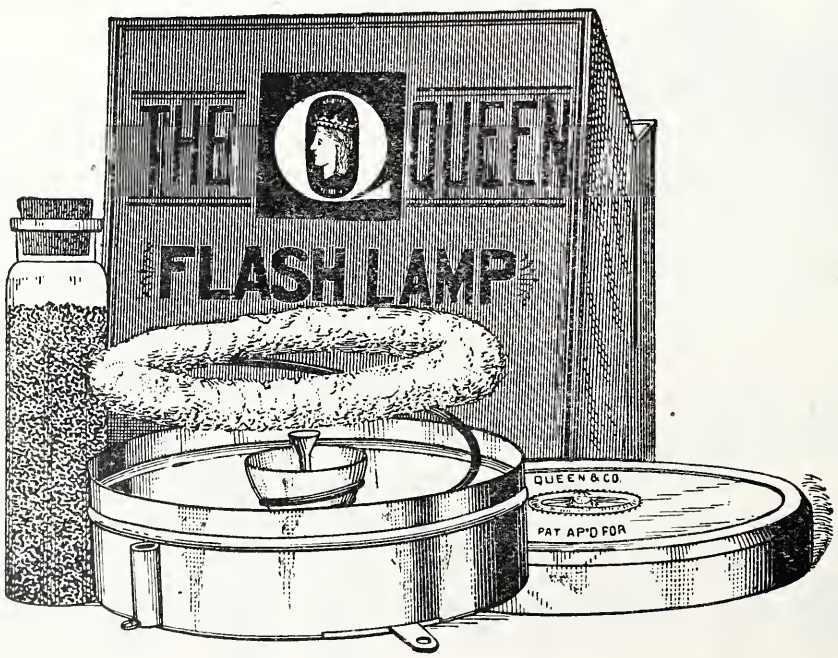
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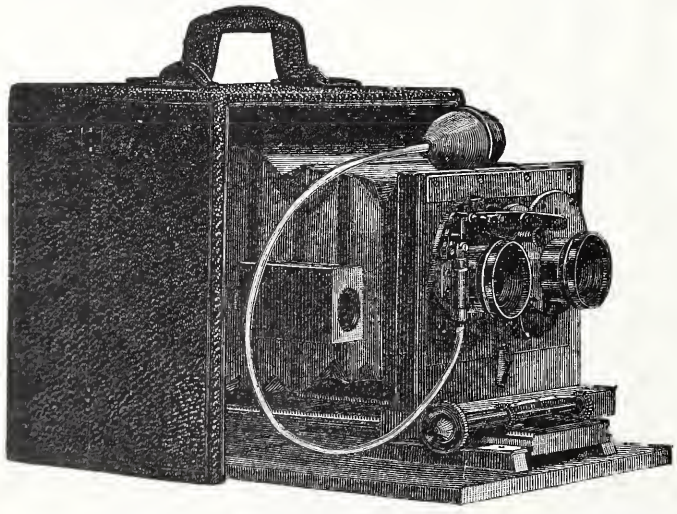
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide ; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release,** $75.00

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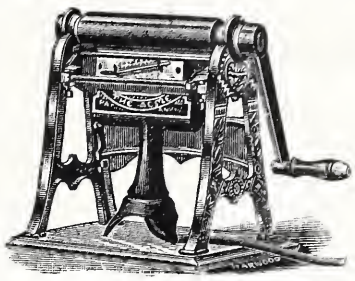
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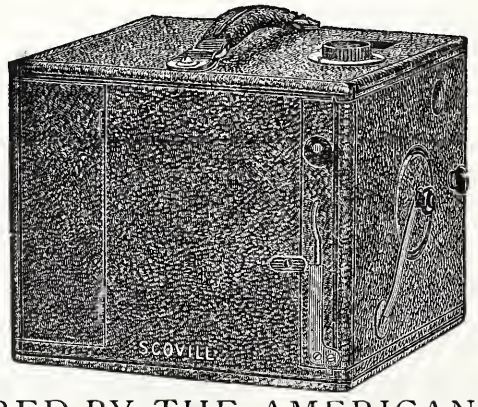
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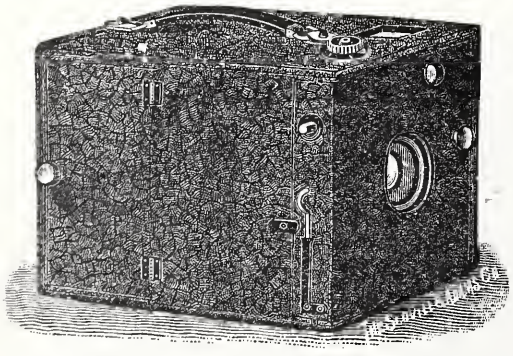
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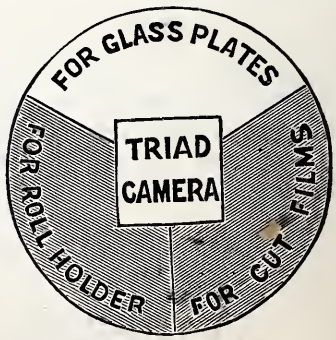
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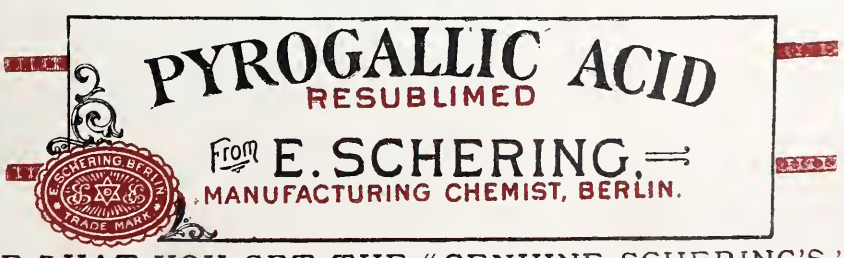
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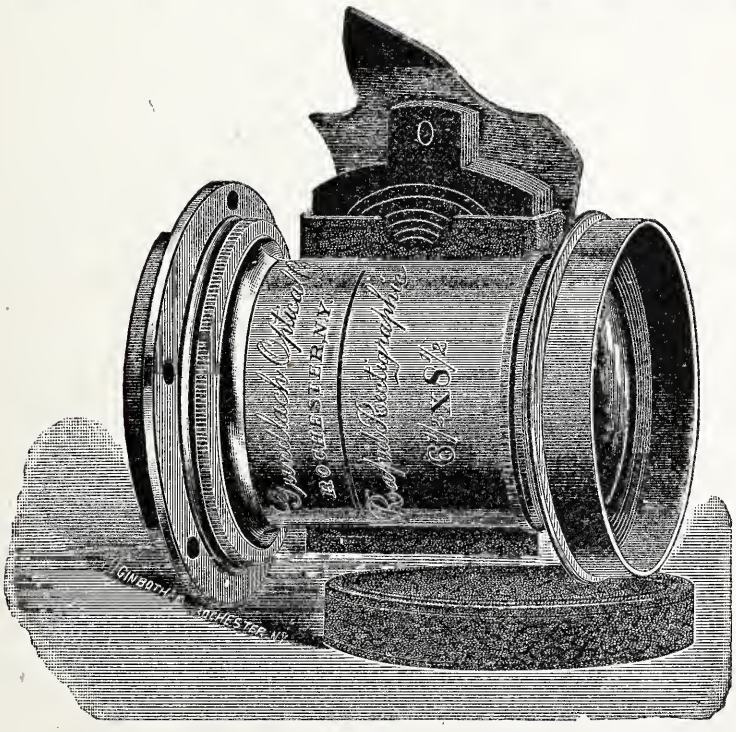
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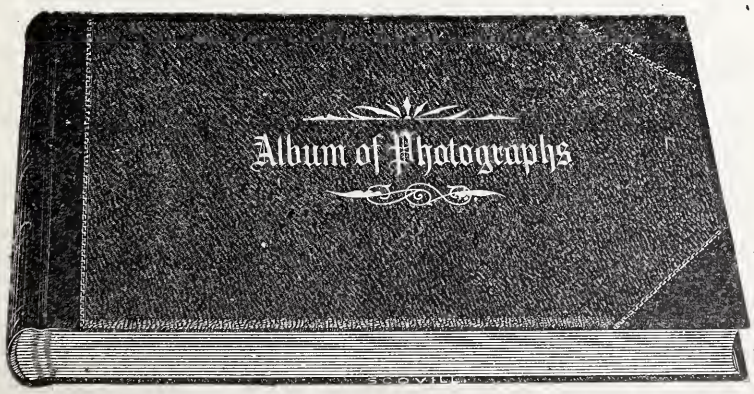
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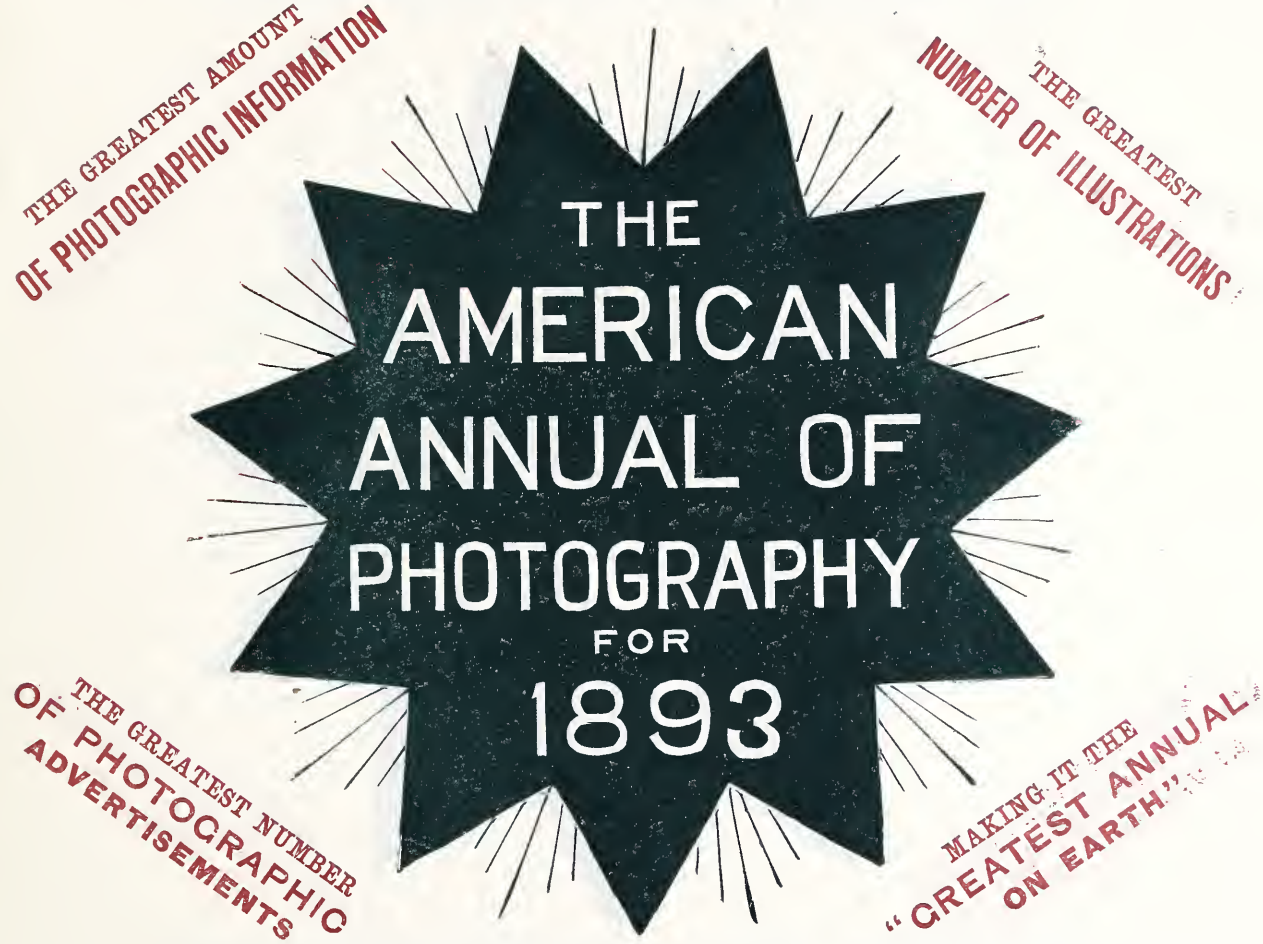
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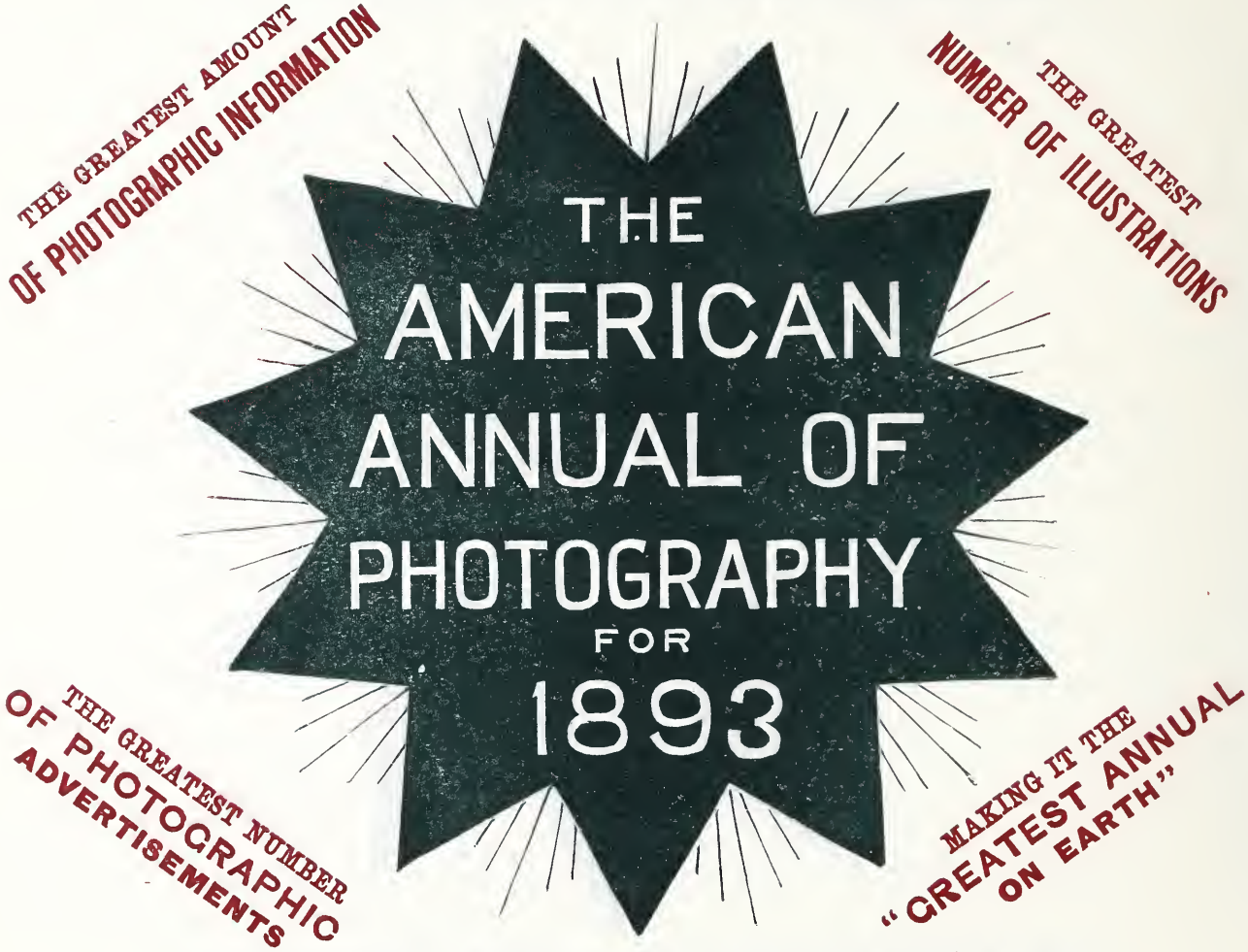
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WINTER MORNING IN THE ALLEGHENIES.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. JULY 29, 1892. No. 567.

A WINTER MORNING IN THE ALLEGHENIES.

WE came upon the spot during an afternoon ramble. A mill-pond, a few trees and a mountain, in the heart of the Alleghenies. Gray water, bare trees, and bleak mountain. A grim, unlovely landscape—yesterday.

But to-day, how different! Jack Frost has been at work all night, and the imprint of his finger is upon everything. Floating leaves are changed to flakes of snow, a spider's web to a string of pearls, and jewels flash from every quivering blade of grass. The trees stand on the mountain side in ghostly rank and file.

The sun appears above the mountain crest, the breath of morning sweeps through the valley, the trees throw down a shower of diamonds, and nature wears again the grim, stern face of yesterday.

W. N. Jennings.

A NEW METHOD OF REVERSING THE IMAGE.

A METHOD to make diapositives direct in the camera has been described by Prof. Rossigner. It is based upon the fact that the image is produced by the developer at the cost of the sensitive film, or that the developer reduces the sensitive bromide of silver in direct proportion to the length of light exposure. Were we then to dissolve the metallic silver constituting the negative deposit, unchanged bromide of silver would remain, which in inverse proportion to the reduced metal forms at some places thicker and at others thinner strata, corresponding with the lights and shades of the object photographed. When these places are again subjected to the action of the developer, the silver salt blackens and the final result is a positive.

There are but few solvents of silver, but they attack the gelatine film more forcibly than the reduced metal, to avoid which, the blackened metallic portion of the film can be transformed into a more or less soluble salt not capable of being reduced. Among the usually employed substances the potassium bichromate gives the best results.

No matter how the exposure is made, whether by contact or in the camera, it should never be excessive. Short exposures, followed by strong and thorough development, is preferred. After careful and thorough washing of the negative, and without being fixed, it is immersed into a solution of potassium bichromate. Ordinarily the blacks begin to yellow at once, but if necessary the process may be accelerated by adding a few drops of nitric acid to the solution. This operation is performed in daylight.

Chromate of silver is of darker color than bromide of silver, for which reason the developed picture does not seem entirely to disappear, but the plate should nevertheless remain in the bath till the black and gray portions have gone. After a thorough washing under a spray of water the plate is returned to the developer, preferably to a solution used previously.

The bromide of silver not at all affected in the first instance begins now to assume a grayish-slate color and, as the process goes on, to change to black almost entirely. When the developer has permeated the whole film, the plate is washed and fixed in sodium hyposulphite, which dissolves only that portion of silver chromate not modified by the developer. The result is a perfect positive.

The process is especially adapted for the making of enlargements from small negatives. With the ordinary methods of enlarging, making a negative first, and a diapositive subsequently, much of the finer details and middle tints are lost, or the different relations of light and shade are but imperfectly reproduced. With the method described but one exposure is to be made, an advantage offered, and of great importance to the making of reproductions as well as to render directly-taken negatives into

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positives. It should be remembered, however, that in all cases the picture obtained is reversed.

The theory of the process is that the developer reduces the silver haloid to the metallic state, and the bromide of silver is reduced to its non-sensitive modification. With the immersing of the plate in potassium bichromate solution, the silver deposit is transformed into silver chromate, and light sensitivness is restored to the silver bromide. In this state the image is but partly reversed, its opaque portions, in consequence of the silver chromate having been dissolved, are now transparent. The subsequent actions are of more complicated nature. A modification of the silver bromide takes place, and becomes visible through the development, and is in direct proportion to the number of bromide of silver molecules.

These portions of the original negative, soluble in hyposulphite of sodium and under ordinary conditions transparent afterwards are now reversed and a perfect diapositive is the ultimate result.

ON THE USE OF FERROCYANATE AND THE COMPOSITION OF THE BATHS OF HYDROQUINONE.

In a communication to the French Society of Photography Mr. P. Mercier said that he has ascertained by careful experiment that potassium ferrocyanate does not exert any action in the development of the image. This salt possesses it is true a weak but exceedingly feeble alkaline action, and therefore acts as a very weak alkali; but considering the proportion of the strong carbonates or oxides of the alkali metals usually employed to exact the reductive property of the reducing agents, this action may be regarded as null. Hence the salt in question is useless; it does not increase the energy of the developing solution, and has not and cannot have an influence on the character of the image, as it has been often stated.

Mr. Merceir points out a singular and curious phenomenon occurring when the developer is prepared with hydroquinone and a caustic alkali. It is the restraining action exerted by this body when employed in too large a proportion, but which does not manifest itself if the developer be compounded with sodium carbonate.

"If one takes a constant quantity of sodium sulphite, 100 grammes, for example, for a bath of one litre," states Mr. Mercier, "and also a quantity, equally constant, of an alkali selected for the experiment, say, 10 grammes of pottassa, and if one gradually varies the quantity of hydroquinone added to the bath, one constats that the activity of the developer increases first very rapidly, reaches a maximum, becomes stationary, then diminishes with regularity until the solution is saturated with hydroquinone, when it acts twice less rapidly than at the period of the maximum."

The maximum of action occurs in a bath containing 8 to 10 parts of hydroquinone per 1000.

Mr. Mercier has also ascertained—which was well known, however—that "the *activity* of the developer, that is, the rapidity with which it develops most completely a proof shortly exposed, is exactly proportionate to the rapidity with which the image appears."

"If one repeats the above experiment with 100 grammes of sulphite and 100 grammes of sodium carbonate instead of caustic soda, the rapidity of the development augments in the same manner, but from the moment one employs from 10 to 12 grammes of hydroquinone it becomes stationary. One observes the same result with eikonogen and the caustic or carbonated alkalies.

EDITORIAL NOTES.

At the meeting of May 6th of the French Photographic Society, a prize similar to that of Mr. Peligot was founded by Mr. Janssen, of the Institute, President of the Society, who awarded it to Mr. Lippmann for his beautiful and scientific discovery of the photography of colors.

At the same meeting Mr. Davanne presented to Mr. Lippmann a silver-gild medal, sent by the Photographic Society of Vienna (Austria), as a reward for his interesting and successful researches.

We are often requested to convert French formulas into English. In the "Annual" the inquirers will find among many useful tables one from which this can be done by a simple addition.

The decimal or metric system of weights and measures is now used by all the savants in civilized countries—even the North American Indians counted for immemorial time by that system, which is the most convenient method of numeration. Why should not also the photographers adopt it? French weights and measures of capacity and of length are not expensive. By using them instead of converting French formulas into English will save precious time, moreover no conversion is exactly true.

A very simple manner of using French formulas without calculation to convert them into our

weights and measures, is to consider the grammes *as grains*, and the cubic centimetres *as minims*, for example, given the following French formula for a good collodio-silver chloride emulsion, due to Dr. Liesegang for printing-out, etc.:

Silver nitrate.....	8 grammes	read grains
Water.....	6 c.c.	read minims
Alcohol.....135 c.c.		read minims

When dissolved, add

Gum cotton.....	8 grammes	read grains
Ether.....160 c.c.		read minims

To which one adds by very small quantities at a time, shaking violently after each addition a solution of

Lithium chloride....	1 gramme	read grain
Tartaric acid.....	1 gramme	read grain
Alcohol.....	35 c.c.	read minims

Photographishe Rundschau for June, 1892, has a portrait of Prof. Charles Ehrmann, our associate and the instructor of the Chautauqua School of Photography. It is reproduced in crayon manner by J. B. Obernetter, from an excellent negative by Miss Catherine Weed Barnes.

In publishing the portrait and a short biography of the Professor, our highly esteemed cotemporary congratulates him on the occasion of his seventieth birthday.

A new and very good way of making matt-surface aristo prints is to squeegee them on the reverse side of a Carbutt flexible film. Its grain is very much finer than the very finest ground-glass. Of course, the film must be scrupulously clean.

The old method of intensifying collodion negatives with bromide of copper has been recently applied to gelatine negatives, and with great success apparently. The solutions of sulphate of copper and of bromide of potassium are of equal concentration, of one part of the substance, and of 100 parts of water by weight respectively. The dry negative, when immersed in the mixed solution, equal volumes of each, begins to whiten at once, wash carefully after bleaching has been completed, and redevelop with any of the usual agents, eikonogen preferably, when the image will appear with much increased intensity. Should the redeveloped plate be more intense than desirable, the process of bleaching and redeveloping can be repeated.

After the final washing of the plate, bathe the plate in a sulphite of sodium solution 1 in 100 acidified with tartaric acid. Washing again is necessary after this bath.

ON THE USE OF ORTHOCHROMTIC PLATES FOR THE PHOTOGRAPHIC MAP OF THE HEAVENS.

In our French exchanges we find a controversy between Mr. N. C. Durér and Mr. Léon Vidal about the use of orthochromatic plates for the photographic map of heavens which we translate in reason of the great importance of the subject under discussion.

Mr. Durér says:

"In number 8 of the *Moniteur de la Photographie*, a reproach is directed against the permanent committee for the photographic surveying of the map of the heavens, not to have sufficiently taken into consideration the use of isochromatic plates, and to have rejected them without a sufficient reason. I think I can prove that neither one of these reproaches are founded.

"First, it will be seen (p. 20 of the *Comptes Rendus* of the meetings of the astrophotographic congress of 1887) that a proposition was made by Messrs. Durér, Hasselberg, Eder, Lohse, Facchini, Vogel and Weiss 'that besides the experiments to be make with the ordinary gelatino-silver bromide plates, one should also experiment with the plates rendered sensitive to the less refrangible rays of the spectrum, by means of coloring matters,' and also (loc. cit. p. 47, 48 and 90, 91) that I have precisely, for the object of rendering possible the use of orthochromatic plates, argued in favor of the lenses constructed with the crown-phosphate and flint-borate, manufactured in Jéna, and which permit to unite at the same focus any three rays of the spectrum, while the ordinary glasses unite only two.

"One sees, on the contrary, that at the reunion of the permanent committee in 1889, notwithstanding I had then the honor of presiding at the meetings, not a word was said in favor of the orthochromatic plates, and that it was only in 1891 that this question was submitted to a committee which has pronounced the criticised quotation.

"This seems to prove that those who have recommended, in 1887, the use of orthochromatic plates, have later changed their opinion.

"As for me, I can say that it is so, and if I had been a member of the committee of the orthochromatic plates, I would have adhered to the opinion of the other members; only I would have expressed it in the following manner:

"'The use of orthochromatic plates necessarily requires also the use of photographic apparatus capable of uniting all the rays of the entire spectrum, from the orange to a great part of the ultra-violet inclusively.

"'If we could produce lenses in *special* glass of Jena, it would be possible to realize this condition with a sufficient approximation. Unfortunately it has been shown impossible to obtain plates of these glasses sufficiently large, and, besides, they are more or less rapidly decomposed under the influence of the air.

"'On the other hand, it would be entirely useless to employ orthochromatic plates in the refractors with lenses made of ordinary glasses. We have, with such lenses, the choice to unite, at the focus, either the visual rays (we have then the ordinary lunettes) or the violet and ultra-violet rays (we have thus the photographic reflectors). But neither one could give sharp stellar images on the plates upon which all the colors make an impression. For, in reason of the great focal length of the lunettes employed for the map of the heavens, the rays which would have been neglected unite at a very great distance from the common focus of the rays which have been taken into consideration, and would, therefore, unavoidably form an areola around the central image of the star.'

"It is understood that these remarks do not apply to the reflecting telescopes. By employing them one could very well use also isochromatic plates. However, they present, for a general work as that of the map in question, so serious inconveniences, in comparison with the reflectors, that their use was not recommended by any one of fifty-six members of the Congress of 1887, not even by those who, as Messrs. Common and Roberts, have used them extensively.

"It is to be expected that the problem of the achromatism will be one day solved. Then the map of the heavens will without doubt be done over with the aid of orthochromatic plates. Now these plates are out of the question for this work, and the consultation of "competent persons at a special photographic point of view" would certainly not change the resolution of the Congress of 1887 (not of the Permanent Committee), not to employ for the work in question orthochromatic plates. All their experience would fall from the physical impossibility of again employing orthochromatic plates with photographic lunettes having a focal length of 3,4 metres, and they would finally adopt the opinion of the commission on this subject."

Answer of Mr. L. Vidal:

"We are very fortunate in having provoked from such a learned man as the honorable Mr. Durér an explicative answer permitting us to better understand the motives which have led the permanent committee for the map of the heavens to exclude from the means to accomplish this immense work the orthochromatic plates.

"From the above paper it would result that if we possessed more perfect sensitive films, sensitive to a greater number of colored radiations, the reproduction of the stars would be actually impossible, and that we should wait for new improvements in the optic apparatus to be able to undertake that beautiful work.

"It would seem, if we have sufficiently understood the answer of Mr. Durér, that, except by the ordinary plates, there is now anything possible in the way where is engaged the executive commission of the map of the heavens.

"The motive set forth has for its basis a chromatic aberration so injurious to the value of the results, that it renders useless for that object the use of orthochromatic preparations.

"Let one state in this case that the work in the way of execution will be forcibly incomplete, even in the zone accessible to the photographic vision, since by the use of ordinary plates will be excluded the stars having a color which does not act on these plates, that is the red, yellow, and green stars, which, it appears, exist in a very great number, as related in the works on astronomy.

"We see that they are red-blood, red-rubies, gold-yellow, emerald-green stars, etc., etc.

"It is certain that already so faint lights, and, besides, of a color without action on the ordinary gelatino-bromide of silver, will not impress the plates selected.

"The result will, therefore, contain only the stars emitting the actinic radiations capable of impressing the plates in question, that is, the blue, violet, visible or invisible radiations, and that is all.

This *all*, it is true, is already considerable, since it is a question of reproducing more than 40,000,000 stars; but as it seems possible to make a more complete work, to push the scientific curiosity beyond these limits, already so extended, have we not the right to desire that our attempts to make and to enrich the knowledge of the endless spaces of still more numerous constellations?

"To make the question is, in our opinion, to solve it.

"In presence of an absolute impossibility, one should evidently bow; but the answer of Mr. Durér does not prove that several operations cannot be made at different foci. Moreover, three

would suffice. To overcome the difficulty it would be necessary to only place in focus the blue radiations for the ordinary plates, then the yellow and green radiations by using a plate sensitive to yellow and green for the stars thus colored, and lastly, to take the focus for the red rays on plates red sensitive for the red stars.

"Each one of the operations would evidently reproduce the stars which would not be found on ordinary plates, and the catalogue of the stars would then be richer and more complete.

"It can be objected that this would complicate the work since three operations instead of one should be made.

"This objection could not be serious. In such a matter one is not in presence of an industrial affair; one is not absolutely limited by the duration of the operation; one makes a fine science and has the right not to be stopped at such a point of the total investigation, unless it is prefered by spirit of method to make a catalogue of: 1st. All the blue stars. 2d. All the yellow stars. 3d. All the red stars.

"In this case, it should perhaps be said, and not purely and simply published, that one excludes the use of the orthochromatic plates as not proper, at present, for the execution of the map of the heavens.

Mr. Durér recognizes that the work should be done over when the improvements will be made to the chromatic aberration. We would prefer that all could be made simultaneously and it would be proper in order that our regrets be not justified, that we had the proof that it is not really possible at present to utilize the more perfect sensitiveness of the orthochromatic plates."

A CAMERA TRIP ACROSS THE HERRING POND.

What a luxury it is to any tourist to be able to take photos of places visited, so in after years he will be able to look on them and be reminded of pleasant days of long ago.

Leaving New York per German S.S. "Spree," March 4, 1891, and after a rather stormy voyage arrived at Southampton, March 12th.

I have lived in this town for twelve years, so am well acquainted with the neighborhood, in which I consider are some of the most charming bits, both landscape and architecture, to be had in any part of the country.

On arrival will be able to find cheap, and, at the same time, good hotels in the town. Some of them are:

Fowler's Temperance Hotel, near the docks.

Radley, opposite the docks and station.

Dolphin, in the High Street.

Royal, in the High Street.

The first and third are the best. There are also several good lodging houses.

We have a good dealer in photo material in W. Martin, High Street.

In and around the town are many old Norman bits, old town walls, gateways, castles, quaint streets, some about four feet wide, with houses overhanging.

Dr. Isaac Watts was born in this town 1674. His house is still standing, but confined in one side of a square plot; on two sides high walls, it makes rather an awkward photo, as it has to be taken right in front.

About one and a half miles from the docks he gets to a lovely avenue over four miles long; also the Common, of 375 acres, and the cemetery, of 27 acres, in which he will find many monuments worth taking. On the Common will be found lakes which, with the surroundings, all make lovely views for the photographer.

I will now mention some of the outings one may take at a small expense.

Taking a train to Netley, fare 18 cents, return. Then either a walk or drive of a mile from the station he will come to one of the prettiest old ruins of an abbey. Permission to be applied for and readily granted by Tankerville Chamberlyn, Esq., of Cranberry Park, near Bishopstoke.

Morning is the best time to visit the abbey, about ten o'clock. After taking all the views in the abbey he can walk one mile and reach the hospital, which is a quarter of a mile long, and contains a fine museum. From the pier fine views of the hospital and water can be taken. To visit the new forest he should prepare to spend a week at least.

Taking the train for Lyndhurst, fare 27 cents, return, he will find a 'bus to take him to a good hotel, or he can wend his way on foot, distance two miles.

I would recommend him to get lodgings, of which there are several to be had. The church exterior and interior is well worth taking. The "Reredos" is considered a great painting, by Sir Frederick Leighton, R. A, subject, "The Ten Virgins." One of the best drivers for descriptions, yarns, and pretty drives, is Pink.

The ancient city of Winchester is almost worth two trips to do it well. It has a fine cathedral, gateways, and along to river about a mile is the little village of St. Cross, where there is a fine old Norman church. Fare to Winchester is 35 cents, return.

Salisbury also has a fine cathedral, entirely different style, and in the town may be found plenty of subjects. The fare is $1 20, return.

On the way to Salisbury he will pass the small country station of Romsey. This a quaint old market town, and has an abbey still used for services. A whole day can well be spent in taking views of the abbey, in the town and along the river. The fare is 31 cents, return.

A whole day or more can be spent in most of these places, as the adjacent country has many subjects for an ardent photographer.

Several boats leave Southampton during the day for the Isle of Wight, where a most enjoyable holiday can be spent. Cowes is the place to make a start from. During the regatta week the bay is full of yachts and men-of-war. Carisbrooke Castle, the place where Charles I. was imprisoned for a short time, has many choice bits.

Bournemouth, Christchurch, Portsmouth, and many other places are easily reached, and all have views which charm a photographer. London is reached in an hour and a half, but I think a photographer will not regret having stopped in the neighborhood I have written about specially.

I have already taken up enough valuable space, but my excuse is that I hope some reader on the look-out for a place to spend a holiday on visiting this country will derive a few hints from this article.

If he likes to write to me I will give him more particulars as to prices of hotels, etc.

Thomas Mansell.

FIXATION OF SILVER PRINTS.

[London and Provincial Photographic Association.]

I have your letter asking for my opinion as to the best method of ascertaining the period when a silver print may be considered to be completely fixed. I remember making some experiments in this direction some time ago, but unfortunately cannot lay my hands on my notes at the present moment. However, I think I can recall them to mind pretty accurately.

The method generally recommended in the text books is, to examine the print by a transmitted light and see whether all patches or blotches have disappeared, but I cannot regard this as at all a satisfactory way. It is true that with paper of light weight, say the ordinary "Rives," the action of the hypo on the silver chloride is discernible, the proof behaving somewhat like an ordinary negative, but is of course much feebler in appearance. In fact, so feeble is the opacity, that if the paper is at all thick it is difficult to follow the action of the hypo even when designedly applied locally, and with really thick papers it is quite impossible, especially as many of these papers will be found to have in them patches of coagulated sizing that would entirely mislead one. Although, therefore, an instructive experiment, I regard the transmitted-light test as of no practical value whatever. In fact, the aspect of the print by reflected light is equally as good a test, as the surface color of the print will at once change under the action of hypo. Of course, I am aware that this change is entirely on the surface, and therefore only shows the difference between the action of hypo and no hypo, but this is exactly what the transmitted test does also; the difference is so feeble that it is really only between those parts that have been touched with hypo and those that have not that there is any distinction marked enough to be of use. Now, tests such as these are, of course, of no value whatever, as fixing a print depends not only on dissolving out the silver chloride, but at the same time in also dissolving by an excess of hypo the hyposulphite of silver formed in the print, and this salt being in solution is of course quite indiscernible either by reflected or transmitted light. And this hyposulphite of silver is unfortunately the very point that causes all the damage in non-fixed negatives, as this insoluble salt rapidly splits up and forms a silver sulphide, the characteristic yellowy-brown stain giving the print the appearance of having been scorched, as is probably too well known to all photographers.

The proper fixation of our prints is, however, so important a matter, that some experimenting in this direction might well be undertaken. I cannot now remember whether I actually did carry out the experiment, or whether I merely intended to; but my idea was to utilize the well-known test for ascertaining whether paper is properly sensitized (that is, the application of a solution of bichromate of potash to the back of the print), for the similar task of discovering whether there was any silver left in it after fixing; the action, of course, being the formation of the highly-colored chromate of silver. One of the sulphurets of ammonium or potassium might also be used, in this case forming locally the same silver sulphide; that, allowed to form all over the improperly fixed print, eventually destroys it; indeed, it is not improbable that any acid solution applied to the unfixed print would decompose the silver hyposulphite sufficiently to form the brown silver sulphuret. But, nevertheless, although interesting as experiments, I cannot look on such tests as ever being of practical value.

As a rule, they either act too completely, and show traces that would be in practice quite innocuous, or else they act too coarsely; in addition to this, they only show the condition of the one particular spot to which they are applied, unless, of course, the whole print is submerged, in which case the test is something like striking the whole of a box of matches to see whether they are good or not, or rubbing writing to see whether it is dry. Applied to the edges of a print, as such a test naturally would be, it might give quite misleading results, as I find that the most frequent cause of imperfect fixation arises from the prints clinging together in the bath, and thus preventing the hypo getting all round them. In such a case it is perfectly obvious that a test applied to the edges would give entirely erroneous results, and it is for reason that, in practice, I never by any chance make use of them.

However, the necessity of perfect fixing is so important, that in practice I take great care in this operation, making assurance sure by always passing the prints through a second and fresh bath of hypo. For the amateur who is only printing at intervals, and who therefore does not keep a stock bath, there is no better way, and it ensures, if the bath is freshly made up, the presence of a sufficient quantity of hypo in the print; but with the professional, who keeps a stock bath continually going, the fact alone of leaving the prints a sufficient time in the bath is not sufficient, as it may very well happen that such a bath has become quite exhausted without his perceiving it. But, in the case of this gentleman, it would evidently be quite impracticable for him to test each separate print by any of the former methods mentioned, and he would have really to rely on a test proof, so that, even if he did take this trouble, he would by no means be certain that it ensured the fixation of his prints as thoroughly as he desired.

However, as I do not believe in the practical value of any of the above tests, except, of course, as a scientific experiment, I should give it as my opinion that the most practical method of ensuring perfect fixation is to carry on the fixing for a specified time, turning the prints over once or twice during the operation, and, in the case of a stock bath, taking the very simple precaution of ascertaining that the hypo is in an active state. As a matter of fact, this can be done continuously and without any preparation, by simply watching the aspect of the proofs as they are placed in the bath. If the hypo is active, as every one is aware, they will at once change color, turning of a much redder color (owing, of course, to the dissolving out of the soluble blue sub-chloride), and the rate at which this change goes on will give a rough indication of the working power of the hypo. The proof is neither delicate nor conclusive, but if the print does not change color or does so very slowly, it is a gentle hint to the operator to refresh his hypo bath. Of course, in those cases where it is customary to treat the prints with salt before fixing, and, where, therefore, the change of color in the hypo is very slight or entirely absent, the usually recommended test of looking through the print may be reverted to, and the result will be more certain if a small piece of uniformly exposed paper, such as a slip off the trimmings of the prints, be used. In this case, if the surface be not too solarized, there is no difficulty in seeing the line of demarcation between the fixed and unfixed portions either by reflected or transmitted light. To those who may desire a more accurate and scientific method, I would suggest a careful measurement by means of a graduated pipette of the amount of silver chloride that the hypo under examination could dissolve.

I would like here to mention one point that I have noticed in fixing prints, and that is, that if strong, or, indeed, weak hypo be applied locally the print will show a difference in opacity and also in surface color at these spots, and these marks will be found to be irremovable, even after a lengthy immersion in strong hypo. I do not know whether these spots represent insoluble portions, or whether it is merely a sort of coagulation of the albumen at these points, but would mark the fact as worthy of some future investigation.

I am afraid that I shall not have been able to add much new light to the question at present before your Society, but owing to the press of other business, I have been entirely out of photography for some time back, and therefore find some difficulty in furbishing up my memory and notes of former experiments.

Lyonel Clark.

Photographishes Wochenblatt accredits the article on the recovery of gold and silver from waste solutions to the *British Journal of Photagraphy*. As it appeared first in THE PHOTOGRAPHIC TIMES, we claim priority. *Suum cuique!*

NONE THERE.

"That photograph of Snatchem has no character in it."

"Well he's a burglar and he hasn't any character."

PHOTOGRAPHIC PROCESSES WITH MANGANIC SALTS.

(*Concluded from page* 383.)

In the former communicaton we have demonstrated that the phosphate of sesquioxide of manganese can be utilized in photography on account of its property of being reduced into a manganous salt under the action of light.

We have also demonstrated that this substance presents, at a practical point of view, numerous inconveniences in common with all the manganic salts prepared until now.

By searching other methods of preparation, we have been able to obtain most of the organic salts of sesqui, oxide of manganese, oxalate, tartrate, citrate, lactac, etc., and we have found in these substances precious properties at a photographic point of view.

Mr. Frémy, in his researches on the salts formed by the peroxide of manganese,* indicates a mode of preparing a manganic sub-sulphate which consists in treating the permanganate of potassium by sulphuric acid.

Led by this idea we have studied the action of acid on the permanganate of potassium, and we have constated the following facts†:

1. When little by little, until discoloration, one adds an organic acid to a concentrated solution of permanganate of potassium, a black substance, whose composition has not been precisely determinated but which seems to be a manganic oxide is precipitated.

2. This substance, carefully washed and desiccated, dissolves in the organic acid, giving brown or deep-red solutions which present all the character of the manganic salts.

3. If, without washing the black precipitate of oxide, one continues adding a greater quantity of acid in the liquor, this precipitate is dissolved, forming a colored liquor whose properties are the same, at a point of view of the photographic applications, as those of the salts prepared by means of the oxide previously isolated.

4. In presence of reductive agents, these solutions are rapidly discolored under the influence of heat or light.

5. The other alkaline permanganates, and also the manganates, give rise to the same reactions. In all probability we are in presence of manganic salts. But until the analysis of all these salts confirms this hypothesis, we make some reserves on this subject, and we will, at present, only deal with the photographic properties of these solutions.

A.—Oxalic Acid.

When treating 6 grammes of permanganate of potassium in 50 grammes of water by a solution at 8 per cent. of oxalic acid, one constates that the liquor first turns brown and then is little by little decolored in giving a black precipitate. There is an evolution of carbonic acid during this reaction; the discoloration is complete when about 6 grammes of oxalic acid have been added. The black precipitate is dissolved in an excess of oxalic acid, and the solution is complete when about 10 grammes of the organic acid are added. The liquor is deep red, very unstable, and rapidly reduced, even in the dark in being decolored.

If, immediately after the preparation of this red solution (of manganic oxalate, most probably), a sheet of gelatinised paper is imbued with this sensitive liquor, the manganic salt is somewhat reduced during the desiccation, but, when the paper is dry, it still presents a red tint, and can be kept during a few days.

This paper is very sensitive; a few seconds' exposure to the sun suffices to completely discolor it.

It is the most sensitive of all the manganic salts we have till now prepared.

But it is unfortunate that other of its properties cause it to be practically rejected.

In fact: This substance is little soluble in water.

It is not possible, therefore, to concentrate the solution.

The paper retains too small a quantity of sensitive matter, and the images produced are too weak.

It is also inconvenient to keep only for a few days.

B.—Citric Acid.

In operating as above indicated for oxalic acid, by the reaction of the permanganate of potassium on citric acid, one obtains a deep yellow liquid whose stability is relatively great. The assays of photographic impressions made with this substance have given no results, on account of the want of sensitiveness of the preparations it can furnish.

C.—Tartaric Acid.

One obtains a brown solution of manganic oxide in tartaric acid by adding this acid to a saturated solution of potassium permanganate until the complete solution of the black precipitate which is formed in the beginning of the reaction.

Sheets of paper impregnated with this solution are much more sensitive to light than those prepared with citric acid.

Inversely if one introduce in tartaric acid crystals or a solution of permanganate of potassium, the reduction takes place in presence of an excess of acid, which is a great reducer; the mass always becoming a little warm, the manganic salt is partially reduced and the solution is totally decolored. This solution, incompletely decolored and set aside in the dark, deposits first white caystals of manganous tartrate little soluble in water, then brown crystals nearly insoluble whose composition has not been yet determinated.

D.—Lactic Acid.

This acid has given the best results at the point of view of the keeping of the sensitive preparations.

The sensitive liquor is obtained by treating 3 grammes of potassium permanganate by 6 cubic centimeters of lactic acid (D=1.225) and taking care of cooling the recipient in which the reaction is taking place.

The quantity of lactic acid which could be added in excess does not seem to have any appreciable influence on the sensitiveness or on the coloration of the color of the developed image. The excess of this acid has, however, the inconvenience to prevent the paper to dry completely; the moisture which it retains accelerates the alteration.

* Comptes Rendus, 1876, p. 175 and p. 1231.

† We have made the study of the substances in collaboration with Mr. Seynetz.

We have tried to increase the sensitiveness to light of this liquor, and for that purpose we have studied the action of the reducing agents such as the salt of seignette, oxalic acid, the hydrate of chloral, saccharose, glucose, the formiates, phenylglucosazone; benzaldehyde, etc. With glucose the sensitiveness is much increased, but the paper remains sticky and is rapidly altered.

The phenylglucosazone and the benzaldehide can be employed only in hydroalcoholic solutions, just before preparing the sensitive paper, the sensitizing solution rapidly penetrates to the back of the paper. The substance which is then in the interior is not reduced during the exposure time to light and the proof is invariably tarnished by the action of the developer.

The alkaline formiates have none of these inconveniences and answer quite well for the purpose in question.

The other reducing agents have not given good results.

All these reducers act, however, in the same manner with the other manganic salts.

E.—Other Organic Acids.

The same method of preparation can serve to obtain with most of the organic acids the manganic solutions sensitive to the luminous influence.

It is thus that act the acetic, malic, tannic, gallic, benzoic acids, etc., etc. Their study remains to be made almost completely.

II.

Until now the photographic process with the manganic salts which has given us the best results is the following:

One pours in a flask kept at about 15 deg. C. by a current of cold water:

Distilled water.... ....50 c.c.
Potassium permanganate..... 6 gm.
to which is added little by little
Lactic acid (Dens. = 1.225).....16 c.c.
then
Potassium formiate..... 3 gm.

The solution is filtered, then poured in a tray placed in a laboratory lighted by an artificial light.

One floats upon the liquid a sheet of paper thinly gelatinized.

After about one minute it is well to sponge it between sheets of blotting papers, and this done to pin it up to dry sheltered from dust and the action of light. The exposure is made under a positive image, if the operation has been well done, the exposure requires a little longer period than for printing on albumen paper.

When the ground and the great whites of the proof are completely decolored, the proof is immersed in a solution at 5 per cent. of hydrochlorate of paramidophenol; the proof rapidly takes the proper intensity, and it only remains to eliminate by washing the excess of the soluble salts retained in the paper, which requires but a few minutes.

The slightly yellowish tint which takes the image can be removed by a weak solution of hydrochloric acid.

After a short washing, the proof is finished as the proofs with silver salts.

The photographs thus obtained have undergone no alteration after having been exposed to sunshine for three weeks.

By continuing, which we propose to do, the study of these processes, we have not the slightest doubt that they can give rise to practical applications.

In the photographic processes we have described, the very oxidizing properties, which the manganic salts possess, are utilized to form coloring matters by oxidation of certain organic reagents, such as the monomines, the diamines, the amidophenols, etc.; the manganous salts formed under the influence of light having no action on the organic bodies, we have been able by these reactions to make a difference between the manganic salts.

The proofs are differently colored according to the developer employed; the following Table shows the colorations which are formed by some of the most important deveopers. There are a certain number of organic substances which reduce the manganic salt into a manganous salt without giving rise to a coloring matter; these latter, such as pyrocatechin, hydroquinone, the chlorhydrates of triamidophenol, of diamidoresorcin, etc., could not be utillized.

By combining two or more of the reagents indicated in the Table, it is possible to obtain intermediate colored reactions which, according to the proportions, more or less resemble those which would have given each one of the reagents, but on the condition that the mixed developers do not react one on the other.

The permanency of the proofs specially depends from the developer which has produced them, and the colored substance which forms the image possesses a variable composition.

Thus, the proofs developed with the salts of aniline are rapidly destroyed by the solar rays, while those formed by the chlorhydrate of paramidophenol possess a remarkable inalterability.

It was interesting to study the nature of these colored substances and to ascertain whether the manganese enters in their composition, or whether the manganic salt acted by giving up oxygen to the developing reagent.

By causing to act, *in vitre*, an excess of chlorhydrate of paramidophenol on a solution of manganic lactate, we have obtained a brown substance, little soluble, which has been washed and analyzed. We have constated that this substance does not contain any manganese and that its constitution is entirely organic.

When one projects the spectrum on a gelatinized paper sensitized with the manganic oxalate, one remarks that the maximum of reduction occurs between the yellow and green.

If the exposure-time is sufficient, the impression can extend to all the visible parts of the spectrum. The curve of actinism coincides nearly to that of the luminous intensities, with this difference that the maximum of chemieal action is a little displaced on the side of the most refrangible rays and brought between D and E.

PHOTOGRAPHIC PROCESSES WITH THE MANGANIC SALTS.

COLORED REACTIONS OBTAINED WITH A FEW DEVELOPERS.

REAGENTS.	COLORATION OF THE DEVELOPED PROOFS.	COLORATION THAT TAKES THE PROOFS UNDER THE ACTION OF HYDROCHLORIC ACID.	COLORATION THAT TAKES THE PROOFS UNDER THE ACTION OF AMMONIA.
Aniline or its salts, hydrochlorate, sulphate, etc.	Green, the whites of the proofs are dull.	The proof remains green, the whites become purer.	Intense violet-blue.
Toluidine (para)..	Red, somewhat soluble in water, the proofs weaken by washing.	Nothing..... ..	Dirty yellow.
Toulidine (ortho).	Green.....	Nothing...	Violet a little soluble.
Xylidine (para)....	Violet red, then violet green, tinted ground, weak image, soluble.	Nothing.....	Pale red-yellow, soluble.
Xylidine of commerce.	Brown yellow, little intensity.	Pale violet, becomes weak by washing.	Yellow.
a. Naphtylamine (chlorhydrate).	Gray-blue.....	Blue..... ...	Nothing.
b. Naphtylamine (chlorhydrate).	Black.....	Brown-black...	Reddish.
Sulphate of diphenylamine.	Dark green, then pale yellowish green.	Nothing..	Brown.
Benzidine (chlohydrate).	Extremely intense blue.	Yellow-brown, by washing the blue coloration reappears.	Yellow, weakening. the blue coloration reappears by washing.
Toluidine (chlorhydrate).	Intense blue.....	Red-yellow soluble.	Pale yellow.
Paraphenylene diamine, (chlorhydrate).	Green, the blue and lastly black, gradually weakening.	Pale brown....	Weak red-yellow.
Metaphenylene diamine, (chlorhydrate).	Light blue.	Red-brown.....	Light yellow.
Toluilene diamine (*m*) (chlorhydrate).	Blue, little intense.	Nothing.....	Yellowish.
Sulphophenic acid	Pale yellow.....	Nothing.....	Very light gray
Gaiacol.....	Orange.....	Nothing.....	Gray, little intense.
Resorcine	Pale yellow.....	Gray, little intense.	Gray.
Paramidophenol (sulphate or chlorhydrate).	Brown, photographic tone.	Brown-red.....	Intense violet.
Orthoamidophenol (chlorhydrate).	Yellow.....	Red, soluble in water.	Nothing.
Protocatechic acid	The blacks do not come, the ground becomes violet. The proof tends to be a veiled negative.	The proof disappears.	Violet red.
Phloroglucine ...	Very pale yellow..	Disappears.....	Nothing.
Pyrogallic acid...	Intense violet-black, veiled proof.	Pale yellow....	Intense red-violet.
Eikonogen.....	Greenish.....	Brown.....	Nothing.
Amidobenzoic acid.	Pale yellow.....	Yellow-red, soluble in water.	Nothing.

Auguste and Louis Lumière.

AN OLD TRICK.

"Just think, he charged me twenty dollars for a dozen cabinets."

"That's what I call doing the cabinet trick with a vengeance!"

Notes and News.

Swain & Bridle, of Philadelphia, have dissolved partnership. Mr. Bridle succeeds.

"I am doing work with a Waterbury camera not equalled by any other hand camera in town," writes A. N. FRENCH, of Pittsfield, Mass.

Removal.—On and after July 25th, the New York Aristotype Co. gives up its office at 28 Elm Street. All communications thereafter should be addressed to them at Bloomfield, N. J.

Prof. Charles Ehrmann had fifteen pupils in his summer class at Chautauqua at the last writing; but they were coming in so fast then that he undoubtedly has a much larger number by this time.

At a meeting of the Phototographic Section of the Chicago Academy of Sciences, held July 19th, the following officers were elected for the ensuing year: Gayton A. Douglass, Chairman; S. W. Burnham, Geo. E. Hale, A. W. Watriss, Executive Committee.

Mr. E. J. Pullman, the photographic merchant of Washington, D. C., who sustained so disastrous a loss by fire on June 28th, barely escaped with his own life. He had to drop from the third floor, catching to rods, and supporting himself by signs, etc., on the way down. The loss was mainly due to the inefficiency of the Fire Department.

David Tucker, Photographic Merchant of Buffalo, so long and favorably known as senior partner of Messrs. Tucker & Butts, has now entire control of that large business and will continue it at the old well-known stand, in the Tucker building, 37-39 Court Street, Buffalo. Mr. Tucker deserves the brilliant success which has been his.

An Improved Method of Preparing Light Sensitive Asphalt.—One hundred grammes of crude Syrian asphalt are boiled in a vessel connected with an inverted condenser with an equal weight of pseudo cumol (boiling 170 deg. C.), in which 12 grammes of flowers of sulphur have been dissolved. The dark brown-colored solution gives off plenty of sulphuretted hydrogen for three or four hours. When the formation of this body has ceased, the cumol is distilled off and the black residue dissolved in benzol (4 : 100) and used for the preparation of zinc plates. Sulphurized asphalt prepared in this way is scarcely soluble in ether, is easily soluble in benzol, tuluol, xylol, cumol, and turpentine oil, and is very sensitive to light. In distilling off the cumol the operation should not be continued long enough to produce a hard, glassy residue. —*E. Valenta.*

ORTHOCHROMATIC PHOTOGRAPHY.

Sensitiveness to Light of the Eosine Dyes.—All the eosine dyes are bleached by light in a remarkably short time. Thus, for instance, paper dyed with tetraiodofluorescein (erythrosin) or tetrabromofluorescein (eosin) loses its color completely after two hours' exposure to direct sunlight. With a view of ascertaining something abou tthe relation between chemical composition and the light-sensitiveness of the eosine dyes, the author made the following experiments. He dyed photographic paper, that is, a pure white paper prepared without the addition of wood fibre, with a solution of the alkali salts of the different eosine dyes. After drying, the dyed papers were simultaneously exposed to direct sunlight under Vogel's Photometer. In this way the following light-sensitive series was obtained, the most permanent being at the top:

Fluorescein.
Dichlorofluorescein.
Tetrachlorofluorescein (chlorinated in the phthalic acid residue).
Tetrabromofluorescein (brominated in the phthalic acid residue).
Tetrachlorotetrabromofluorescein.
Octobromofluorescein.
Tetrachlorotetraiodofluorescein.
Tetrabromotetraiodofluorescein.
Dichlorotetrabromofluorescein.
Dichlorotetraiodofluorescein.
Tetrabromofluorescein (brominated in the resorcinal residue).
Tetraiodofluorescein (iodized in the resorcinal residue).

From this it follows that the entrance of chlorine, bromine, or iodine, either in the resorcinal or phthalic acid residues of the fluoresceines increases the light-sensitiveness, and more so by their being combined with the resorcinal residue than with the phthalic acid residue. The iodized fluoresceins are much more light-sensitive than the analogous brominated fluoresceins. In order to ascertain whether the bleaching of the eosine dye depended upon oxidation or reduction, the following experiments were made: A very dilute solution of tetraiodofluorescein in water was divided into three portions. To one was added caustic soda and hydroxylamine hydrochloride. To another portion, sodium hydrate, and to the other portion hydroxyl. A portion of each of these three solutions was preserved for comparison in the dark, the other portions were exposed in test-tubes to sunlight. After two hours' exposure it was found that the solution containing hydroxyl showed no marked change; that containing the sodium hydrate had become slightly lighter, it was also noticed that the same occurred with neutral solution; the solution containing the hydroxylamine was on hte contrary totally changed, the tetraiodofluorescein having been reduced by the hydroxylamine under the influence of light to ordinary fluorescein. The progress of the reduction can be very easily observed. Tetraiodofluorescein in aqueous solution shows no trace of fluorescence, but after exposure of a solution to which hydroxylamine and caustic soda have been added for ten to fifteen minutes to light an appearance of fluorescence is noticed, this with exposure becomes stronger until soon all the tetraiodofluorescein is reduced to fluorescein. The solutions preserved in the dark were totally unchanged. That the reduction of the tetraiodofluorescein in the light in the presence of hydroxylamine is not caused by the action of the sun's heat is shown by the fact the solutions kept in the dark did not undergo change when heated. All the eosine dyes containing bromine and iodine behave on exposure to light in the presence of hydroxylamine in the same way, that is, they are all reduced to fluorescein.

PHOTO-MECHANICAL PROCESSES.

On Chemigraphic Etching.—After referring to M. Merget's discovery that when a zinc plate is partly covered with a deposit of another metal and is dipped in sulphuric, hydrochloric, or even a solution of an organic acid, it is attacked only in the part covered by the deposit, but if nitric acid be used then the uncovered parts of the zinc are acted upon. The author remarks that in 1873 M. Gourdon, in a communication to the Paris Academy of Science, mentioned that sulphuric acid could be diluted considerably, and that this dilution varies according to the metallic salts used, as follows:

Metals.	Volume of water to one volume of Sulphuric Acid.
Cobalt	10,000
Nickel	7,000
Platinum	7,000
Iron	7,000
Gold	5,000
Copper	4,000
Silver	3,500
Tin	1,500
Antimony	700
Bismuth	500
Lead	400

Taking this as the base of his experiments, the author produces an impression on a zinc plate either by the asphalt process or by the transfer in greasy ink. Then the plate is immersed in the solution of a metallic salt, which will precipitate upon the unprotected zinc, and the plate is then immersed in very dilute sulphuric acid.

To test the value of different metallic salts for this purpose, a zinc plate was covered with strips of different metallic salts and submitted to the action of 1 per cent. solution of sulphuric acid during one hour. The depths of the etching were measured in millimetres, and the following table shows the result:

Nickel ammonia tartrate	0.13
Cobalt chloride	0.11
Iron + copper chloride	0.10
Iridium chloride	0.09
Palladium chloride	0.085
Nickel cyanide	0.077
Chromium chloride	0.07
Gold chloride	0.07
Silver ammonia nitrate	0.025
Lead nitrate	0.01
Mercury chloride	0.

In case the image is not produced with a resinous or greasy matter, but with gelatine, the metallic salt used to obtain the precipitation can be used in alcoholic solution.

The author found that aluminium behaves in a very similar way to zinc, and he describes the following experiment with aluminium:

If the surface of aluminium be touched with a salt of mercury, such as bichloride, a dark spot of precipitated mercury is formed; if the plate be next wiped dry, the dark spot begins to rise from the surface, till in about ten minutes' time it reaches the height of 10 millimetres.

Examined closely it will be found that the top is homogeneous, and is supported by innumerable white fila-

ments, looking like a forest grown from the surface of aluminium. Under the microscope each filament has a tubular structure, and if the filament be carefully extracted, a small globule of mercury is perceptible at the end nearest to the aluminium plate. Evidently mercury is first precipitated in a fine black powder, and by accumulation of particles forms a globule of mercury. This forms an amalgam, which, as soon as it is formed, is decomposed, alumina being formed, while mercury again forms new portion of amalgam, and so gives rise to the growing of the alumina forest. When strips of different metals are precipitated on the sheet of aluminium, that part which is covered with mercury is etched deepest of all.

L. Warnerke.

PHOTOGRAPHERS' ASSOCIATION OF OHIO.

ARRANGEMENTS are completed for the Convention at Columbus, O., August 10th and 11th, Wednesday and Thursday, and a royal good time will certainly be had. All the leading operators of the State will be in attendance. Several prominent ones from Chicago, besides a number from adjoining States have signified their intention to be present at this entertainment. Such it will be, and the best one ever held in America.

Ohio is a great State for prominent people, and the photographers will be in it with the rest of them. We make presidents, statesmen and photographers in Ohio, and are going to make this Convention a success, and to do so, we want every photographer in Ohio to attend and do some work. This is a meeting for photographers, and we want you to come or send some of your assistants, and let them go home and tell what a good thing you missed.

Excursion rates have been secured on all railroads, accommodations at the hotels, and everything has been done that can be, for the convenience of the members and visitors.

When buying your railroad ticket, be sure that your agent fills out a certificate; this certificate, when properly countersigned and presented at the ticket-office at Columbus, entitles you to a return ticket at one-third the regular fare.

Be sure to get a certificate, as one hundred (100) are necessary to make this rate good. Every ticket entitles you to a certificate.

Pack pictures carefully and direct them in your own name, to Y. M. C. A. Auditorium, Columbus, Ohio, in care of L. H. Hume, Secretary, P. A. of O.

Space will be provided for every one to make an exhibit, so bring something along and let your neighbors see what you are doing, even if you are not pleased with your own effects.

This meeting is held especially for you, and we want you to come.

WHAT SHE NEEDED.

Young lady (with unattractive face.): I would like to have a nice photograph taken.

Photographer: Never fear, I'll do you more than justice.

Young lady: Oh, it's not justice I want, but mercy!

SOMEWHAT TECHNICAL.

"Photographers don't eat very heartily, do they?"

"I don't see why they should not."

"I only ask because I hear they have so many dry plates before them!"

Queries and Answers.

306 H. S. B., of Georgetown, O., asks for information as to the best English lens.

306 *Answer.*—We reply that in our experience we have found the Swift and the Ross to be about equal in their working qualities, and we think that undoubtedly they are superior to any other lens.

307 GEO. W. H., Texas.—Bradfisch aristo paper loses its entire film of gelatine in the final wash water. We have no ice here, and the temperature is unusually high just now. I like the paper but cannot use it because of its weakness of film. Is there a remedy for it?

307 *Answer.*—We advise to postpone toning and washing till the early morning hours, when the temperature is comparatively lower than later in the day. Do not wash in running water, but in several changes of a weak alum solution, and finally wash in pure water.

308 M. K.—Before immersing the enclosed picture in the Omega toning solution, it was of a dark-brown color. What is the cause of its fading to the sickly yellow tone.

308 *Answer.*—You have left it too long in the bath. Or you may have taken hold of a toning solution consisting of lead nitrate and hypo only?

When you tone prints in the combined bath judge of the color desired by holding the prints before you. If by transmitted light the tone begins to show a reddish-purple, remove it at once to running water and wash copiously.

309 D. B. H., Virginia.—Please let me know by return mail whether the Omega paper will print-out by artificial light; and whether it is suitable for enlargements by artificial light.

309 *Answer.*—Omega paper made of chloride of silver gelatine emulsion is intended for printing-out. You may print upon it by a powerful electric arc light, but it will require a very long exposure. For enlargements it is too slow unless you develop the partly printed image by means of acid pyrogallol.

310 H. PERRY D.—I wish to make some alterations in mounted photographs in order to make them more effective in "half-tone engraving," but I find them too greasy—so much so that my water-colors will not *take* on them. Can you suggest a remedy for this, and not destroy any portion of the photo? Is there any preparation made that will take off the burnished face and not mar the effect?

310 *Answer.*—We presume you refer to prints on albumen paper. Apply by means of a soft camel's-hair brush, a solution of prepared oxgall, 15 grains to 6 drachms of water, and retouch upon the dried surface with color mixed with the same solution, to which a little gum arabic and glycerine has been added. The gloss of the burnishing is easily taken off by soaking ing the print for a minute or so in water, after which it may be blotted between paper and dried spontaneously.

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AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

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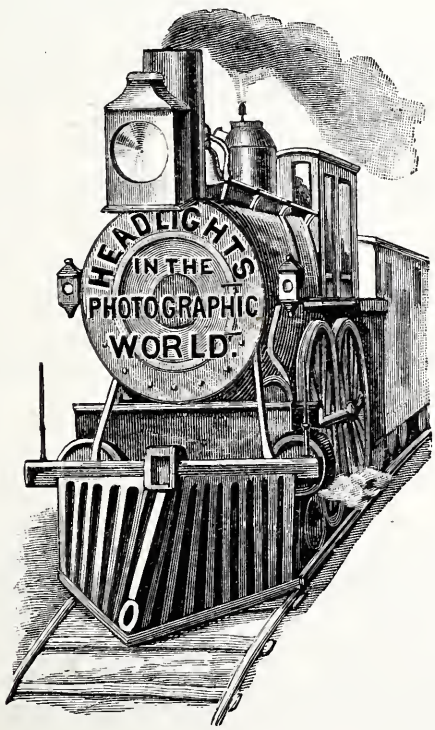
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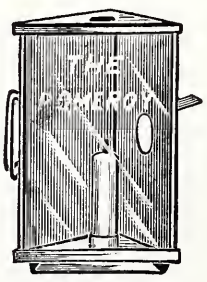
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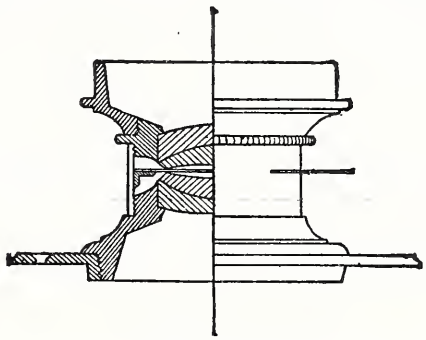
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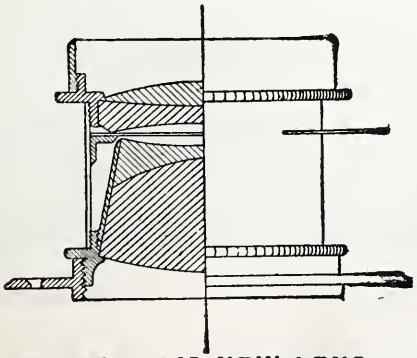
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CARBUTT'S ORTHOCHROMATIC
PLATES AND CELLULOID FILMS

Still Ahead: Read what is said of **this Season's Work.**

MONON ROUTE.

W. H. McDOEL, Gen. Manager.
JAMES BARKER, Gen. Pass. Agent.

PASSENGER DEPARTMENT,
MONON BLOCK,
CHICAGO, April 7, 1892.

JOHN CARBUTT, ESQ.,
WAYNE JUNCTION, PHILADELPHIA.

MY DEAR SIR:—I have just returned from a long trip to the South, visiting the principal points of interest in Florida, and taking a run to Cuba. I took with me your **ORTHOCHROMATIC FILMS,** and had most wonderful success in getting views of noted spots. To say I am delighted but half expresses it. My trip took a month; making most of the journey in a private car I was enabled to rush round from spot to spot in a way which would not have been convenient under other circumstances, and, indeed, at the time being I hardly realized what I was doing, but now I am home making prints at spare moments; I am enjoying the trip over again, rendered possible by the camera.

Very truly, JAMES BARKER.

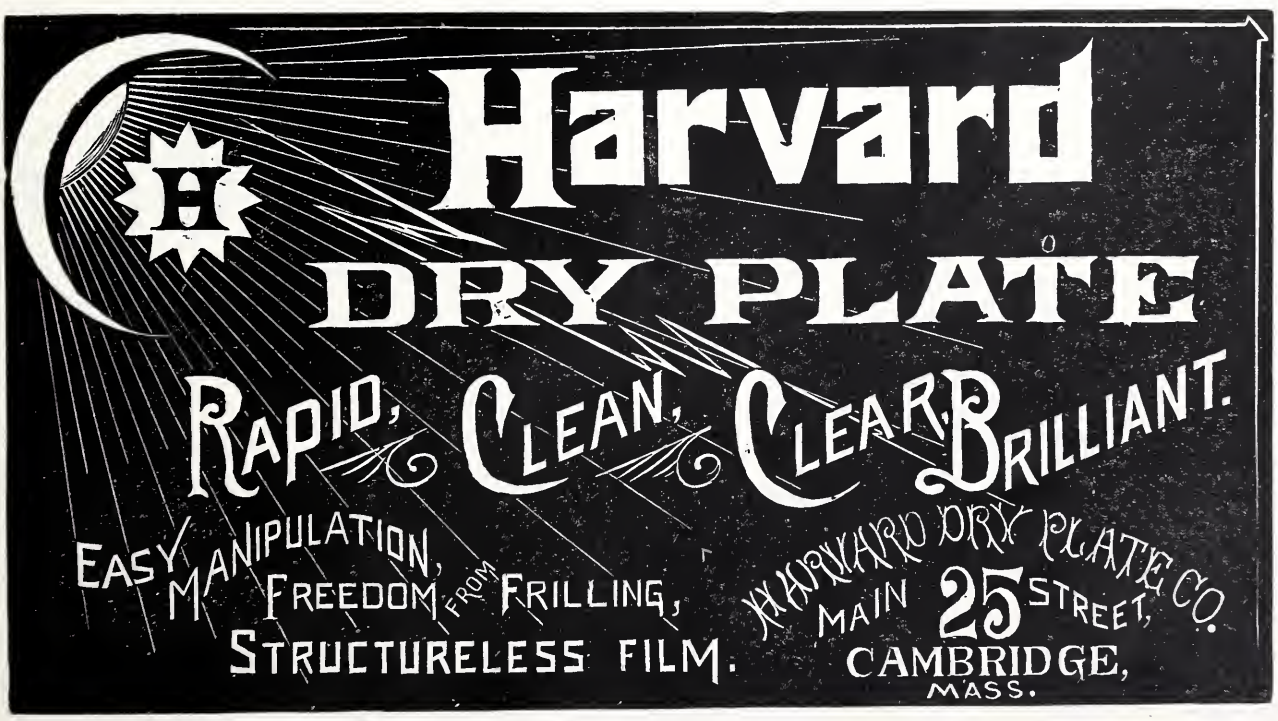
All contemplating a summer tour should place their orders with dealers early, to avoid the season's rush. Carbutt's Dry Plates and Flexible Films are to be obtained from all dealers in photo materials. Send to factory for reduced Price List and list of brands.

Manufactured by JOHN CARBUTT,

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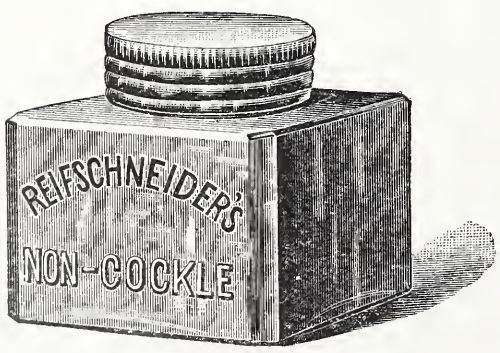
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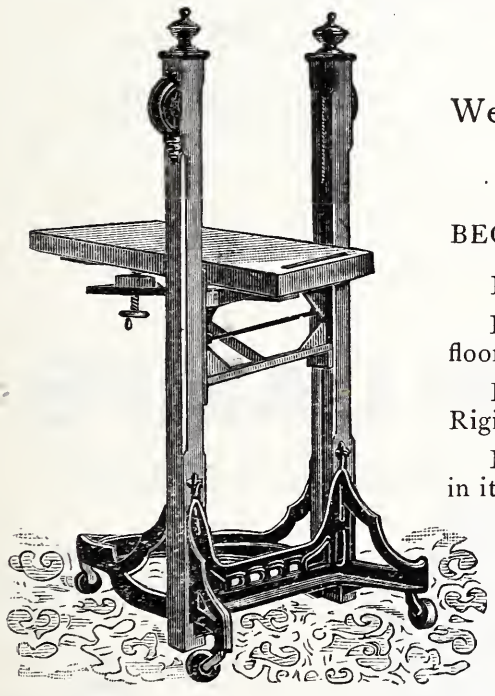
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It is simple in construction and will not get out of order.

It will enable you to get your Camera within 13 inches of the floor, or as high as you wish from the floor.

It is fitted with turning casters, with rubber wheels. Strong, Rigid, Easy in Operation, and Ornamental in Appearance.

It is the invention of a practical photographer and is perfected in its details. WARRANTED PERFECT.

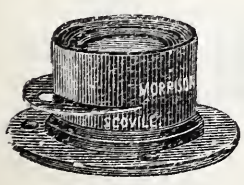
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MORRISON WIDE-ANGLE VIEW LENSES.



These lenses are absolutely rectilinear; they embrace an angle of 100 degrees, and are the most rapid *wide-angle* lenses made.

No. of Lens.	Diameter	Size of Plate.	Equivalent Focus.	Price.	
0..1	inch...	3¼x4¼ inch...	2¼ inch...	each, $20.00	
2..1	" ...	4 x 5 " ...	3¼ " ...	" 25.00	
3..1	" ...	4¼x 6½ " ...	4¼ " ...	" 25.00	These 5 sizes will fit into 1 flange.
4..1	" ...	5 x 8 " ...	5¼ " ...	" 25.00	
5..1	" ...	6½x 8½ " ...	6½ " ...	" 25.00	
6..1	" ...	8 x10 " ...	8 " ...	" 30.00	
7..1½	" ...	11x14 " ...	10½ " ...	" 40.00	These 2 sizes will fit into 1 flange.
8..1½	" ...	14x17 " ...	14 " ...	" 50.00	
9..1½	" ...	17x20 " ...	17 " ...	" 60.00	These 3 sizes will fit into 1 flange.
10..1½	" ...	20x24 " ...	22 " ...	" 80.00	
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☞ Nos. 1 to 6 are all made in matched pairs for stereoscopic work. The shorter-focused lenses are especially adapted for street and other views in confined situations. For general purposes, a pair of No. 5 lenses will be found most useful.

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A. M. Collins
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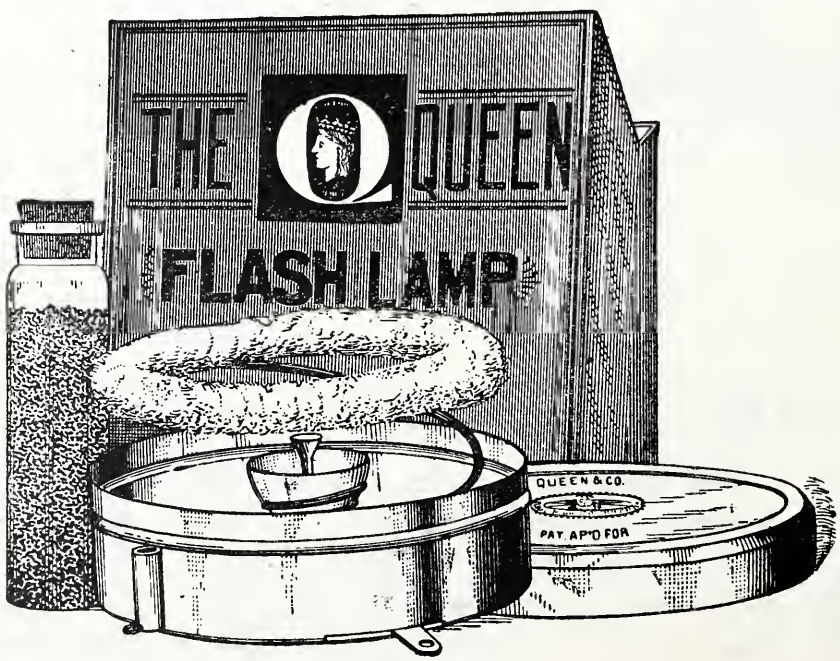
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THE ONLY ENTIRELY SATISFACTORY FLASH LIGHT APPARATUS IN EXISTENCE.

Mailed to any address upon receipt of $1.50.



$1.50

STATISTICS:

Depth 1¼ inches
Diameter 4 "
Weight 4 ounces.

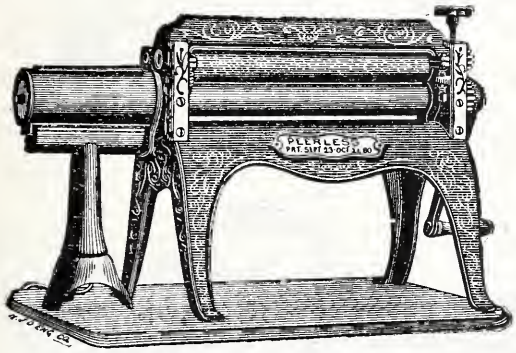
Charge (small) 20 Gr., (costs about 1½ cents.)
" (large) 30 Gr., " 2 "

Size of room effectively lit when good lenses are used, about 25 x 30 ft.
Size of room effectively lit when cheap lenses are used. about 16 x 20 ft.

Time consumed in getting the lamp ready for discharge, 1½ minutes.

Jas. W. Queen & Co., Phila.

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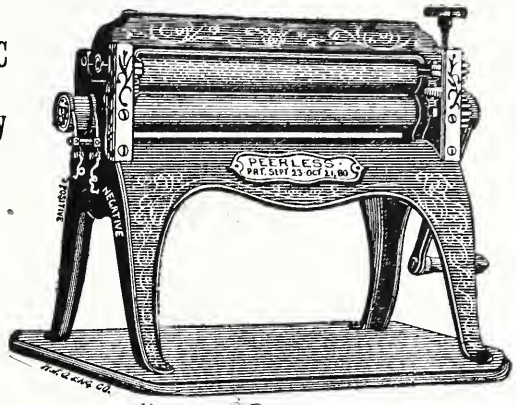
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For Aristo Paper our machines cannot be equalled.

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ARISTOTYPE PAPER.

A PERFECT SUBSTITUTE FOR ALBUMEN PAPER.

This paper prints with negatives of **ordinary** density, and gives **rich** and **brilliant** results, with clear and prominent whites.

It does **not** stick, nor does the surface of the print rub off.

THE PERFECTED BRADFISCH TONING AND FIXING SOLUTION. is recommended for use with Aristotype Paper.

It works perfectly and is always clear.

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THE 5 x 7 HENRY CLAY
Stereoscopic Camera
FOR TRIPOD AND HAND USE.



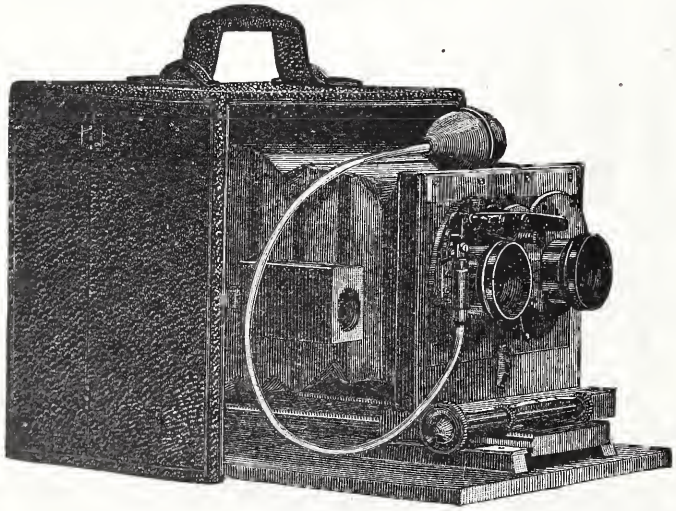
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release,** $75.00

This camera can also be made with vertical sliding and swing front. By means of the former the proportion of sky and foreground may be adjusted; the latter permits the taking of subjects which may be either above or below the level of the camera and still preserve the lines vertical.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, and with vertical sliding and swing front,** . $80.00

A 5x7 Roll Holder for Transparent Films can be furnished with either of the above forms of this camera for $15.00 additional. This addition would make the case about two inches wider and one-quarter inch higher.

THE SCOVILL & ADAMS CO., 423 Broome Street, New York.

Matt BP Surface

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Portraits or Landscapes.

It may be worked with Crayon, Pencil, India Ink, or Water Colors much more easily than are Bromides or Solars, and with more pleasing results.

PLAIN PRINTS RESEMBLE PLATINOTYPES.

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The Scovill & Adams' Plain Felt Background, recently introduced, is a great boon to all Photographers, both Professional and Amateur.

It is made of strong, thick and even stock, and is of an agreeable neutral drab color. It is especially suitable for vignetting. The texture of the cloth absorbs instead of reflecting light, and thus produces soft effects, and agreeable depth in print. The liability of defacement by water stains is obviated.

The prices of these grounds are as follows:

4 x 6 feet	$2.50
5 x 6 "	2.75
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6 x 8 "	4.00

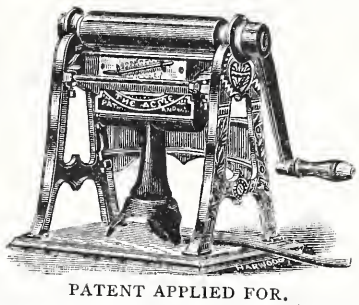
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Quickest Heater in the world.
Saves seventy-five per cent. of gas, oil or alcohol.
No sweat, no smoke, no smell.
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Will burnish an 8 x 10 and all sizes under.
Simplest Rotary Burnisher ever made.
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Guaranteed in every particular.

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Para-Amidophenol Developer

IN ONE SOLUTION.

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PRICE, 50 CENTS.

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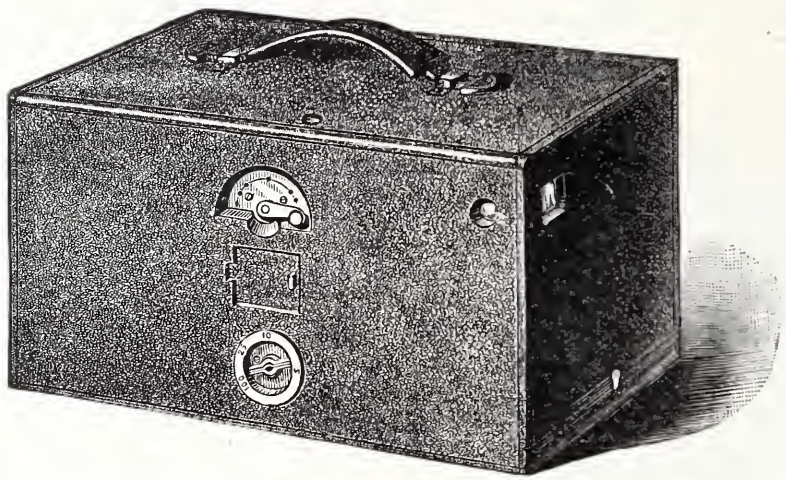
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The Handiest Simplest Most Effective



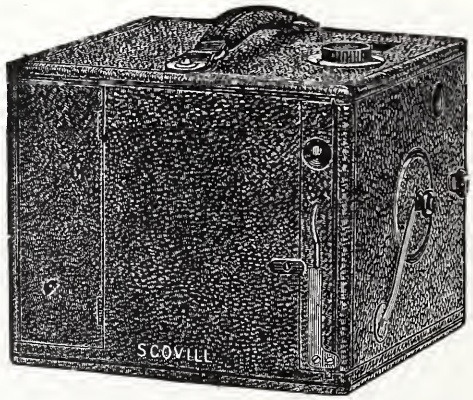
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VERY COMPACT AND EASY TO WORK.——AN EXCELLENT LENS.

Send for a copy of "THE BRISTOL" Manual, which is fully illustrated, and perfectly describes this unique Camera.

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MANUFACTURED BY THE AMERICAN OPTICAL CO.

Timed and Instantaneous Photographs. This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size, It is

The only Detective Camera made for plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

The Recessed Finder shows *the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

The Focusing Scale is beside the Finder, where it may be readily seen and adjusted.

Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders	$25 00
5 x 7 Waterbury Detective Camera, with 2 Double Holders	40 00

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Patented July 17, 1887.

STAMP PORTRAITS.

These are the only stamp portraits that are gummed and perforated, and being the exact size of ordinary U. S. postage stamps, photographers and others will find them an interesting novelty in advertising their business, as they can be mounted on business and visiting cards, letter-heads, etc.

We also make a size four times larger than the stamp pictures. Send for samples and prices, which will be furnished on application.

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HAVE A DISTINCTIVE CHARACTER OF THEIR OWN.

Salient points of our Water Colors are faithful retention of likeness, delicacy of coloring and brilliancy of tone.

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After many years of scientific research a preparation for the salting of plain photographic paper has been discovered, by which method the finest printing results are obtainable. The advantages are apparent to all.

I.—Constant use will not discolor the silver bath.
II.—Will produce the finest detail in printing.
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IV.—The "*New Matt-Surface*" paper when sensitized will keep fresh for a long time if properly stored.
V.—The price has not been advanced.

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Sample Sheets, by mail, 10 cents each.

The Buffalo Argentic Paper

(EVERY SHEET GUARANTEED).

WITHOUT large advertising or expensive demonstrating is rapidly taking the lead.

MERIT alone can do this, and users of Bromide Paper, who are ambitious to make the highest standard of work, are asked to give it a trial.

RESULTS that have not heretofore been expected with this article are possible with this brand.

Its delicacy of half-tones renders it peculiarly suitable for producing the warm or Sepia tones. FORMULA SENT FREE. PRINTS MADE FOR THE TRADE.

The Hoover Patent Printing Machine can now be had. **Price, $100.**

Our goods are for sale through all Stock Houses, who will send you circulars upon application.

BUFFALO ARGENTIC PAPER CO.

The Rudell Camera,

An Entirely New Magazine Camera,

Carrying 12 4 x 5 Glass Plates.

Most Simple in Action. Never Misses.

Size, only 10¼ x 6 x 6¾ inches.

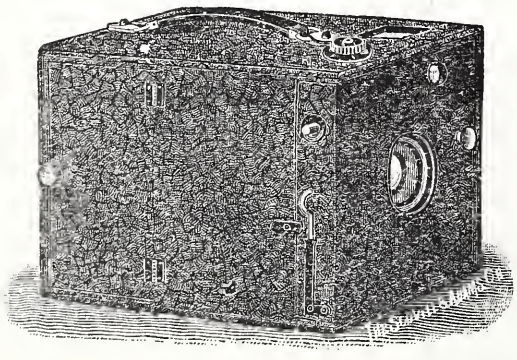
Fitted with a most ingenious Shutter, by which the plate is never exposed except during action.

AN EXCELLENT "DOUBLE COMBINATION" LENS.

Price, only $30.00.

FOR SALE BY ALL DEALERS IN PHOTOGRAPHIC MATERIALS.

THE TRIAD CAMERAS.



When a discovery in photography is announced, it is claimed that the new article will displace everything then in use. These claims are seldom justified. There is generally found a place for the new article, if it has any value, and for the old as well.

For commercial purposes, for instance, such as the reproduction of photographs for illustration, it has been demonstrated that collodion "wet" plates are better than dry plates. For the use of the amateur, on the other hand, dry plates are much better than wet plates. Though many new supports have been tried, the sale of glass dry plates is larger now than ever before. Where only a few pictures are to be made on one day's outing it is likely that the experienced photographer will always use dry plates or cut films.

If he is going away for a summer vacation, or for a trip abroad, and expecting to to make a large number of pictures, he will procure a roll-holder loaded with continuous films. This will save him the bother of developing while he is away from home, and of changing plates; but he cannot well know what results he has secured until he has exposed the entire roll and has had it developed.

For those who want to use celluloid instead of glass plates, and are not willing to trust to good luck in the exposure of the complete roll of film, we offer with the "TRIAD" camera a *double* film holder which is very light. If the amateur carries six of these holders (loaded with twelve films) he is well supplied for one day · that is, if he is prudent and aims to get only really good pictures. At night, either in a photographic studio or in his own hotel room, the exposed films may be put away into safe receptacles, and another lot of unexposed films substituted for them.

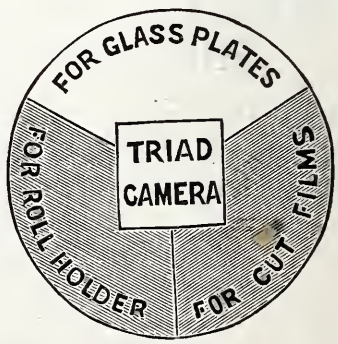
The Triad Camera is fitted with the latest improved Roll-Holder for continuous films, two double holders for glass plates, or two double film holders, if the latter are preferred.

This Camera is fitted with an Instantaneous Rapid Group Lens with easily interchangeable diaphragms —the most satisfactory detective camera lens ever made. It has a finder so constructed that the image is the same as that on the ground glass, though of course it is proportionately diminished in size. Usually the finder in a Detective Camera shows simply the image on the plate, but not its relative size and proportions. The Instantaneous Shutter in this camera is provided with a speed adjuster which works from the outside, and the focusing device and scale are conveniently near the finder. This is very important when one is trying to photograph rapidly moving objects.

For timed exposures use a tripod (easily adjusted to the camera by the plate underneath), open the door at the back, so that the image on the ground glass can be easily seen, set the shutter with the opening opposite the lens, and bring into use the felt cap which fits the opening in front of the camera. By complying with these simple requirements you have a complete camera for timed exposures.

	Price complete.	Price without Roll-Holder.
4 x 5 Triad Camera, with Roll-Holder, two Double Dry Plate Holders, or two Cut Film Holders	$35 00	$25 00
Extra 4 x 5 Triad Double Dry Plate Holders		1 25

Holders for Cut Films, same prices as above.



TRADE MARK.

For sale by all dealers in Photographic Materials and the Manufacturers,

THE SCOVILL & ADAMS CO.

AMATEURS, ATTENTION!



Please remember that in speed and every desirable optical quality no lenses yet constructed can rival

Voigtländer's Euryscope Lenses,

which are made in SEVEN different styles.

BENJ. FRENCH & CO.,

319 Washington St. BOSTON, MASS.

Revised price-List sent on application.

Correspondence solicited.



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New York.

Illustrative and Pictorial Work of the Highest Class only by the

PHOTO-GRAVURE,
PHOTO-GELATINE,
HALF-TONE BLOCK,
} PROCESSES.

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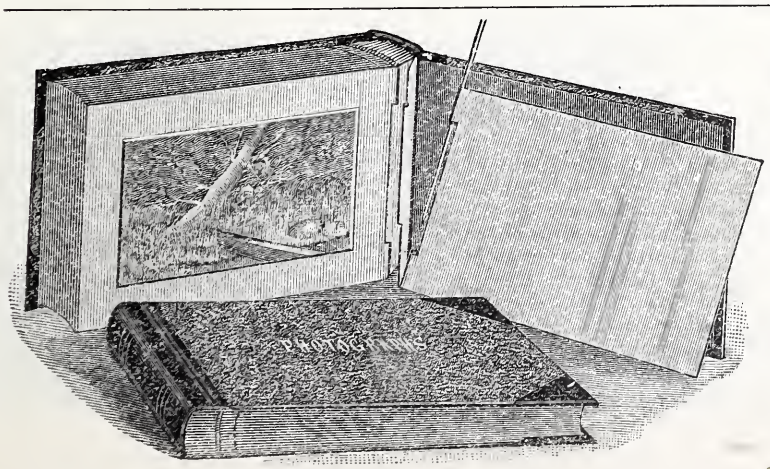
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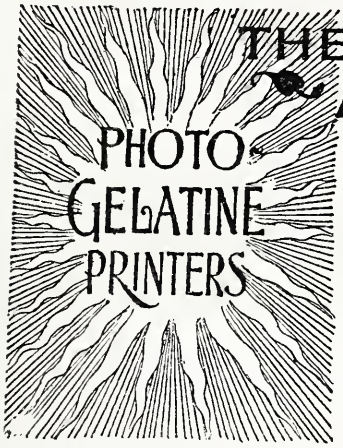
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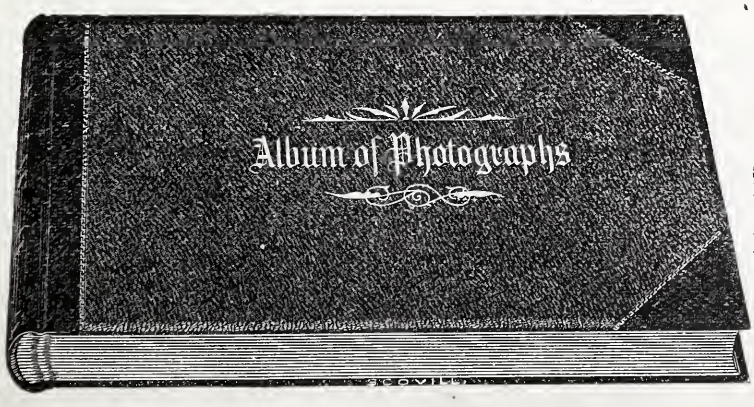
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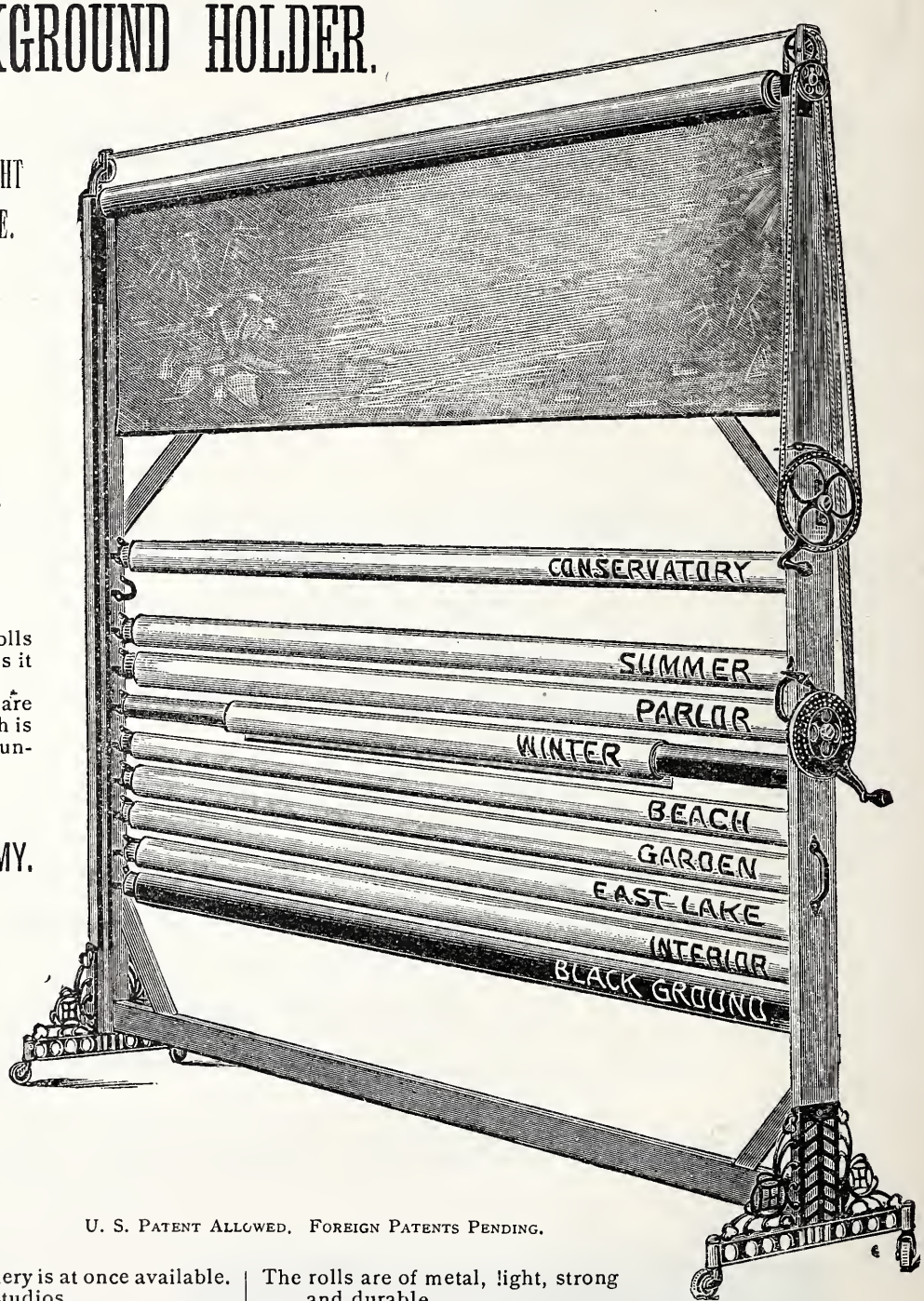
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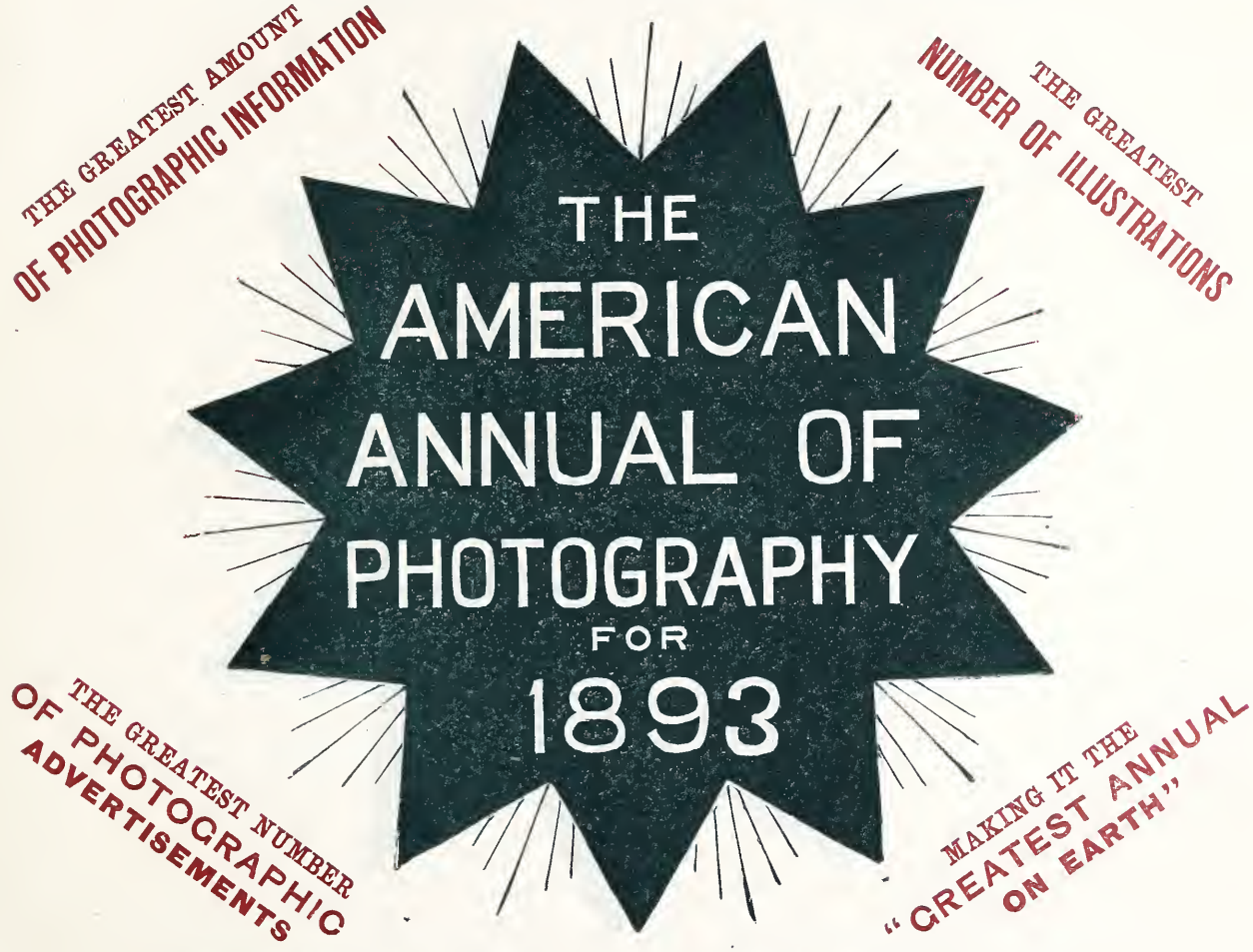
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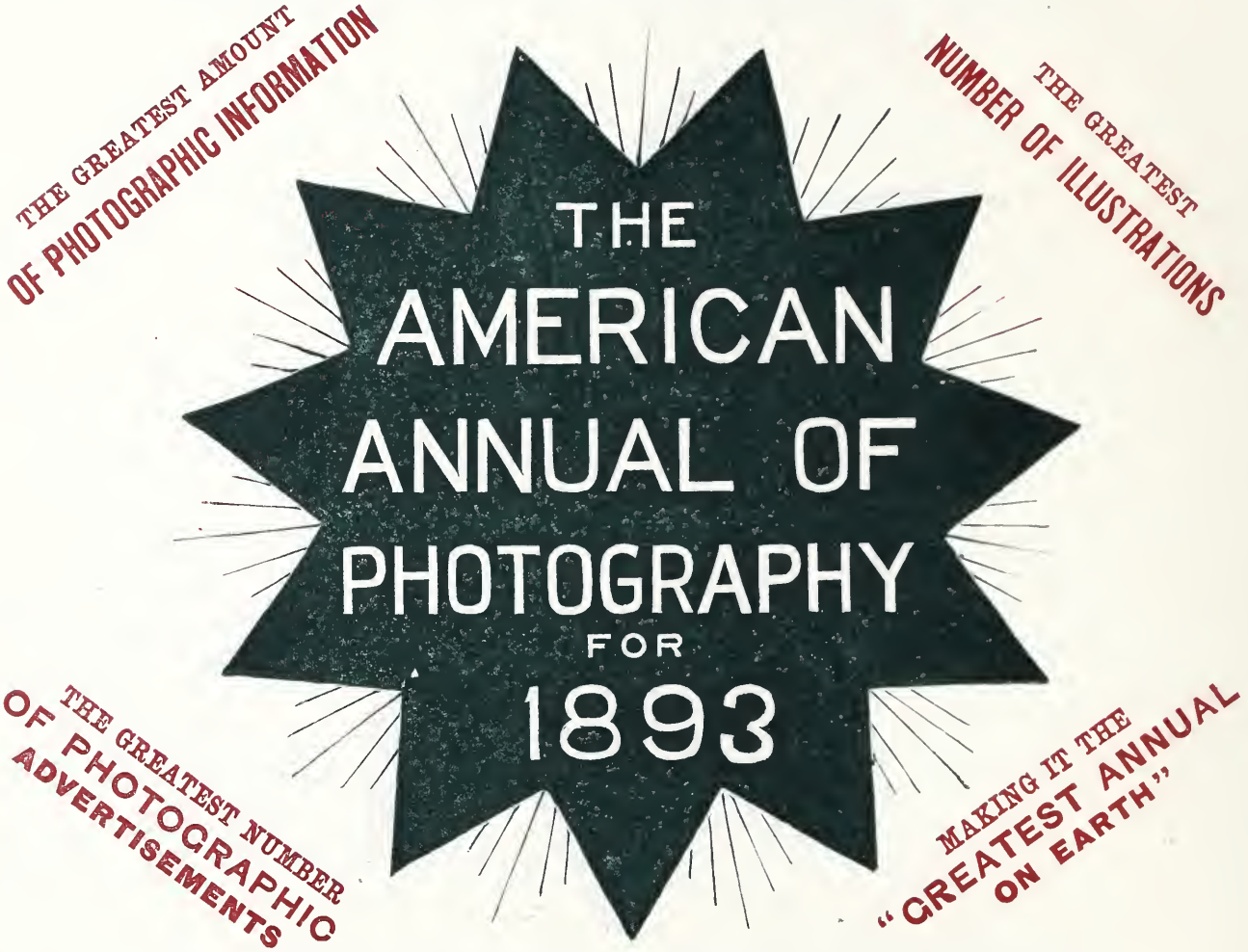
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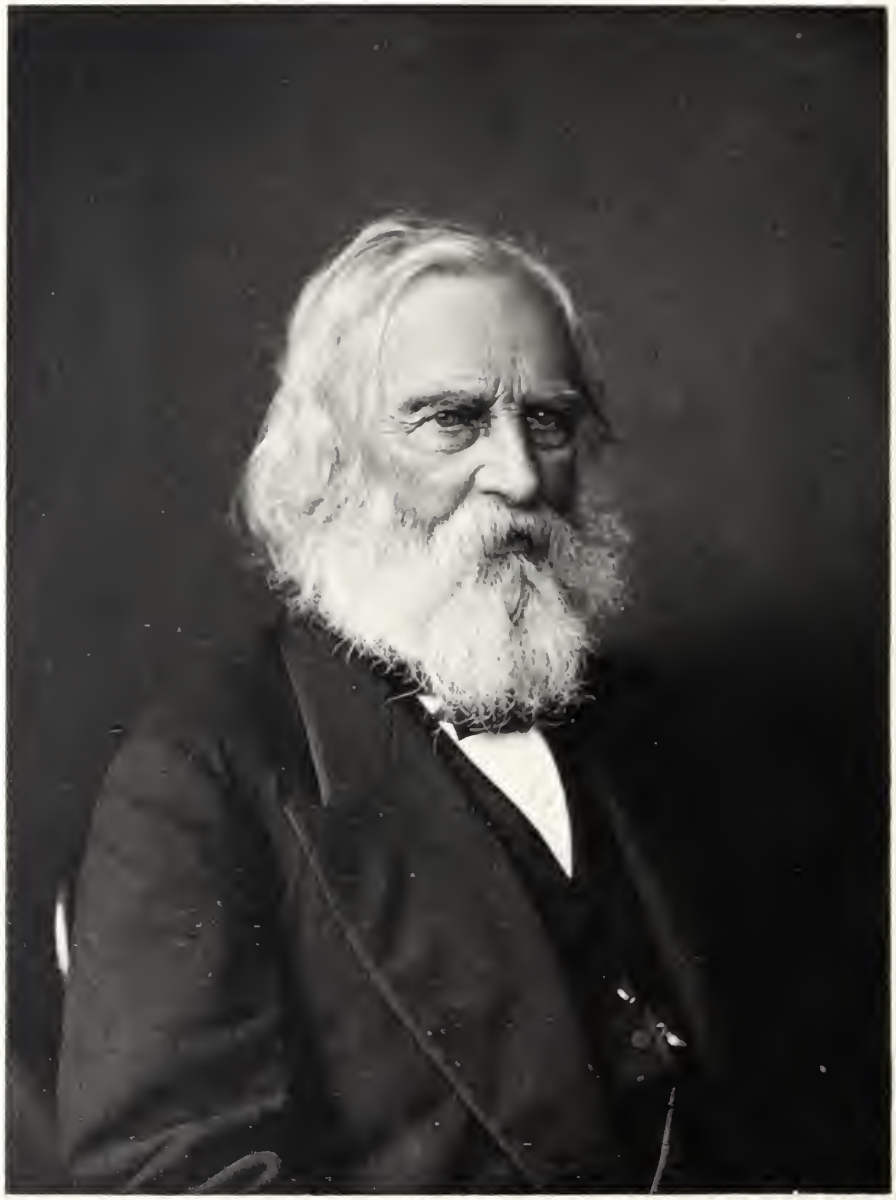
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Henry W. Longfellow

THE PHOTOGRAPHIC TIMES.

VOL. XXII. AUGUST 5, 1892. No. 568.

HENRY W. LONGFELLOW.

WE present our readers this week with an excellent portrait of America's favorite poet, Henry Wadsworth Longfellow. Both the negative plate and the phototype reproduction were made by Mr. Gutekunst in his series of Portraits of Eminent Americans. And like all the series, this portrait is an admirable example in photographic lighting and posing for the study of young portraitists, as well as an excellent likeness of a most interesting man.

VALLOT'S HELIOCHROMIC PROCESS.

ALL the heliochromic processes based on the action of the colored rays of light on the violet silver chloride are obsolete since the discovery of permanent images with the colors of nature which have been recently published in the TIMES. Our researches should now be entirely directed, as advised by Mr. Lippmann, toward increasing the sensitiveness of the photo-films, which we think will be done very shortly; for, as shown by Messrs. Lumière, films of geletino-silver bromide emulsion can be used for the purpose in question instead of the slow photo preparations with albumen and collodion. As to orthochromatism the difficulties for improvement seem great, but not insurmountable.

As THE TIMES must tell its readers all that is or has been done in photography, we give in this issue the process of Mr. Vallot published sometime ago. It reads substantially thus:

Float for three minutes a sheet of photographic paper on a solution of

Sodium chloride	20
Water	100

When dry, sensitize it by floating for five minutes on the following silver bath:

Silver nitrate	20
Water	100

and wash for ten minutes in water very often renewed. This done, immerse the paper for five minutes in the above solution of sodium chloride and wash again thoroughly.

Now prepare a solution consisting of

Tin protochloride	3
Sulphuric acid	a few drops.
Water, distilled	100

Dilute 20 parts of this with 500 parts of distilled water and into it immerse the paper prepared side upwards and expose it to light *under the solution* until it assumes a dark-violet coloration, wash then for five minutes and let dry in the dark.

The next operation consists in immersing the paper for two minutes in a bath prepared by mixing equal volumes of the following solutions:

A.

Potassium bichromate	5
Water	100

B.

A saturated solution of copper sulphate.

When dry the paper is ready for use. The exposure is very long; the specimen shown by Mr. Vallot—a proof from a stained window—required an exposure of three-quarters of an hour on direct sunshine.

On the removal of the print from the frame the colors are very faint. To revive them the print is treated by a solution of sulphuric acid at 20 per 100 of water, taking care not to leave the print too long in this strong acid solution, for it will soon destroy the colors. It now remains to wash the print rapidly and thoroughly and to enamel it.

Naturally the print should be preserved from daylight, as no means has been yet discovered to fix the image.

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CONFERENCES OF THE CONSERVATORY OF ARTS AND TRADES.

MR. CHARLES GRAVIER has given a very complete *compte rendes* of the remarkable conference on the photographic chemistry given at the Conservatory by Mr. Charles Fabre, author of the "Traité Encyclopedique de Photographie," whose authority on this matter is incontestable. THE TIMES had it translated for the benefit of its readers. It is well sometimes to give the precedence to the scientific part of photography over the purely practical.

In this conference Mr. Fabre exposes, says Mr. Gravier, the various radiations due to the decomposition of light and the chemical reaction which they produce.

He enumerates the different lights utilized by the photographer, and by means of a cartridge of magnesium he photographs the auditors ; the negative is afterwards printed as a diapositive by Mr. Cousin, Secretary of the French Society of Photography, then projected on the screen.

Then he boldly enters upon the scientific questions by the study of the measure of the chemical activity of light known under the name of *actinometry*, and which, for the photographer, has the importance of the *photometry* for the opticians.

The photo-chemic reactions are, according to Berthelot, mostly *exothermic*, that is to say, evolve heat; to measure the work of light, it is, therefore, necessary to choose a combination or a decomposition which absorbs heat, in a word an *endothermic* reaction.

The luminous waves originate numerous exothermic reactions, such as the formation of hydrochloric acid, numerous phenomena of oxidation observed in photography, the reduction of the salts of silver, of gold, of iron peroxide, etc., ... taking place with an oxidizable substance. In this series of reactions, light determinates the chemical phenomenon, but it is not it which makes the principal work; that is, which gives the heat brought into action ; light plays the part of a match which would serve to set fire to a pile of wood.

In most photographic processes light gives rise to a latent image.

The lecturer then examines the different processes from a photo-chemical point of view, beginning with the oldest.

In the daguerreotype the silver iodide formed on the plate condenses the vapors of mercury when it is modified by light.

Meldola has stated that steam was also condensed ; it is Möser who first ascertained this fact.

The reagents employed to *develop* the latent image, are generally defined as chemical developers and physical developers.

The chemical developers employ the material, brought by the developers themselves, to constitute the image.

The developers utilized in the old processes—albumen, collodion—are physical developers. If one pours in a solution of sulphate of iron another of nitrate of silver, a precipitate is formed which deposits itself only on the parts modified by light.

In the chemical theory the silver molecule is produced by light and serves as a nucleus for the reduction of the metal.

Mr. Davanne has stated that if one trace, on a card, lines hardly visible with a piece of silver, these lines are developed in a developing bath compounded with nitrate of silver.

On a glass plate, cleaned with rotten stone and iodine, Lermentoff traces some words with paraffine, a lead pencil, copper, solder of tin ; then pour on the plate the iron sulphate developer mixed with nitrate of silver. The lines are developed as positive ; with paraffine, the plate is veiled, the lines remain clear and one has a negative. If the place is examined by the microscope, one sees that the particles of reduced silver are identical with those which constitute an ordinary negative. Hence, the molecules of a body conductor of electricity fixed on a glass surface suffice to form an image with the aid of a developer.

During the intensifying of a weak image the solution acts as a physical developer.

The lecturer projects on the screen a weak image which is intensified in the tank placed before the lantern.

He also utilizes the tank of the lantern of projection to demonstrate the electrical theory :

1. By passing a current in a solution of acetate of lead, the arborescent crystallization known as the tree of Saturn is formed around the metallic wires placed at the negative pole.

2. If a solution of nitrate of silver is employed, the tree of Diana is obtained.

In the two cases one sees the current of acid evolved at the positive pole.

Therefore, one can be led to say that the phenomenon of the development is a galvanic or galvanoplastic phenomenon. In fact a molecular voltaic couple could be formed by a molecule of silver or of any other conducting body, of a silver molecule or a molecule of iron sulphate in the middle of the developer mixed with the salt of silver and

poured on the plate. If the electro-motive power of that element is sufficient, the nitrate can be decomposed and a silver molecule deposited on the first. The motion of the liquid continuously places other molecules of nitrate and sulphate in contact with the silver already deposited, and the action continues until exhaustion of the mixture.

If that hypothesis be true, one can form a voltaic cell of an ordinary size with a plate curved in V, a developer and a solution of nitrate of silver separated by a partition made of vegetable parchment. Lermentoff has made that cell by using a developer of double sulphate of iron and ammonia and the silver solution employed for intensifying. The plates have 0^m003 by 0^m001 of section. A little while after the formation of the couple, the electrode immersed in the silver nitrate becomes covered with the metallic crystals, and one hour after one obtains aigretes of a most brilliant white. If a platinum wire is used the quantity of deposited silver is less. The developer with pyrogallic acid first gives a few crystals, but the liquids soon become mixed through the porous partition.

Hence the deposit on the latent image under the influence of a current is undeniable.

The lecturer thought that it was necessary to present the different theories, but he resumes in saying that it is only necessary to remember this: the latent image is formed by a substance modified by light.

However, one should not forget that there are substances which are modified by chemical phenomena.

To demonstrate how the physical developers act, he rubs with an agitator the glass vessel and crystals of phosphate ammonio-magnesic are formed; the deposit occurs specially on the rubbed parts.

The chemical developers are those capable of decomposing the molecules of the silver salt modified by light.

From this it would result that a developer must be a substance easily oxidizable. One should not think, however, that every easily oxidizable substance can be employed as developers, for the product of their oxidization sometimes tends to determine an inverse predominant action; it is thus that powerful reducing agents, such as sulphurous acid and the hyposulphite of sodium cannot develop the latent image.

Mr. Fabre examined afterwards the phenomenon of the *photographic irradiation*:

It sometimes happens that the photographic action spreads to the parts of the sensitive film which have not been directly impressed; frequently this phenomenon is observed when the object photographed presents violent contrasts, that is, very clear parts confining to very obscure parts. The line of separation of the clear parts and of the obscure parts is not sharp, it is lightly stumped in consequence of the spreading of the black parts on the transparent parts, it is this phenomenon which constitutes the photographic irradiation known by photographers under the name of *halo.*

Practice has demonstrated that this phenomenon is more or less manifest according to the composition of the sensitive films, the nature and thickness of their supports, the duration of the exposure, etc. . . . . but it is certain that this irradiation is principally due to the reflection of the luminous rays on the posterior surface of the glass plate which holds the sensitive film. The best means to avoid this reflection consists of placing in contact with the posterior surface of the plate a substance whose index of refraction is similar to that of glass. (Cornu.)

The lecturer projects some images on which the phenomenon of irradiation is quite characterized and the same images which are exactly sharp on account of the application of the compound indicated by Mr. Cornu.

Mr. Molteni, the well-known optician, who assists Mr. Fabre in his experiences, now proceeds to the development of the latent image.

A positive is obtained by contact with a negative exposed to the oxyhydric light, and it is afterwards placed in the horizontal tank (of the support at total reflection of Mr. Molteni), then developed and fixed in presence of the auditors.

Mr. Fabre then describes the positive process:

He prepares a silver salt sensitive to light, he mixes it with a solution of gum, then spreads on a sheet of paper the compound in the syrupy state and exposes it behind a screen to the oxyhydric light, all the parts not sheltered are blackened.

But this coloration is only superficial, as it has been indicated by Mr. de la Baume-Pluvinel.

The experiences of M. M. Davanne and Girard have demonstrated that during the coloration of the salt of silver exposed to light the metalloid is partly liberated and that the coloration is due to the formation of a sub-salt of silver.

The lecturer then indicates the thermic experiences made in the laboratory of Mr. Berthelot, in order to constate the disengagement of the heat evolved by the mixture of nitrate of silver and of hyposulphite (thiosulphate) of sodium, and by the mixture of chloride of silver with the same salt utilized to fix the photographic image.

The phenomenon of substitution in toning is

explained, and Mr. Fabre prescribes the tendency to tone and fix the image in one operation.

The photo-chemic theories of the salts of iron, platinum, chromium, are indicated with the observation that these phenomena belong as well to the general chemistry as to the photographic chemistry.

The lecturer afterward examines the influence of the different colorations on sensitive films when the latter are mixed with coloring matters; he explains the different theories of the orthochromatism; for the colors utilized in the practice of photography, he determinates the result which must be obtained.

In concluding this instructive conference, Mr. Fabre engages the auditors to cultivate photographic chemistry.

EDITORIAL NOTES.

EMPEROR FRANCIS JOSEPH, of Austria, has conferred upon our good friend and contributor, Chas. Scolik, of Vienna, the title of photographer to the Imperial and Royal Court, in recognition of his merits as a scientific and practical photographer and successful experimenter.

T. L. PHIPSON published in 1861 a method to make permanent photographic iron prints. He floated paper for about ten minutes upon a solution of ferric oxalate, to which a trace of ammonia was added. After exposure to light for from ten to twenty minutes, a pale yellow image of ferrous oxalate is formed. Treated with ammoniacal potassium permanganate the image is fully developed with a brown color, and rendered black by means of pyrogallol. Copious washing in pure water completes the process.

DR. R. NEUHAUS recommends to use yellow and ruby-colored transparent celluloid laminae for dark-room illumination instead of glass of the same color.

In a tray furnished with closely-fitting cover of the same material developing may be safely done in daylight, and without fear of fogging the plate.

Transparent celluloid allows much light to pass, more than ordinary colored glass in many instances. A yellow celluloid screen combined with one of ruby color allows but ruby light to pass, and but a trace of yellow, the main part of yellow rays and those of green, blue and violet being totally shut off.

To prove the permanency of these laminae they were exposed to direct sunlight for three weeks. By testing them spectroscopically afterwards a slight molecular change was noticed in the yellow screen, in consequence of which a trace of blue light had become perceptible, but not enough to become injurious in practical work. The red screen had darkened considerably, all violet, blue and yellow rays had been absorbed, but green had become more perceptible. Red and yellow screens in juxtaposition are perfectly safe for orthochromatic work.

Celluloid being highly inflammable these screens should not be used for lanterns and artificial light.

DR. EDER compares the chemical process taking place in platinum printing with those of kallitypy as follows:

In the first instance a reduction of ferric oxalate to ferrous oxalate occurs on exposure to light. The ferrous oxalate *per se* reduces silver and platinum salts very slightly, but when combined into double salts with potassium, or with sodium, the action is made more energetic, producing vigorous images in the platinum process. But when potassium, or still better, sodium oxalate is directly incorporated with the sensitive stratum, developing is dispensed with, because the reaction takes place within the substance of the film. Hot steam applied to the proof is a great accelerator in this process.

Dr. Nicol's kallitypy is quite analogous to the platinum process, his paper being mainly sensitized with argentic oxalate and ferric oxalate. As in the platinum process the ferric oxalate is reduced to the ferrous salt on exposure to light, acting but feebly upon the silver salt unless it is developed with potassium oxalate, when a vigorous and brilliant picture results. Cold oxalates or sodium potassium tartrate are more powerful developers.

A mixture of sodium ferric oxalate and argentic oxalate gives direct printing silver-iron papers, and pictures with brilliant contrasts when hot steam is applied to the proof.

The photo-chemical process of either of these methods may be explained by the following equations:

A.—PLATINOTYPY.

I. $Fe_2(C_2O_4)_3 = 2[Fe(C_2O_4) + 2CO_2$
Ferric oxalate = Ferrous oxalate + Carbonic acid.

II. $6Fe(C_2O_4) + [3K_2PtCl_4] = 6[Fe_2(C_2O_4)_3]$
Ferrous oxalate + Potassium Platinous Chloride = Ferric oxalate

$+ Fe_2Cl_6 + CKCl + 3Pt$
+ Ferric Chloride + Potassium Chloride + Metallic Platinum.

B.—Silver. Iron Process and Kallitypy.

I. $Fe_2(C_2O_4)_3 = [Fe(C_2O_4)] + 2CO_2$
Ferric oxalate = Ferrous oxalate + Carbonic acid.

II. $2[Fe(C_2O_4)] + Ag_2(C_2O_4) = Fe_2(C_2O_4)_3$
Ferrous oxalate + Silver oxalate = Ferric oxalate
$+ 2Ag$
+ Metallic Silver.

In either of these processes the primary reaction, resulting in the formation of ferrous oxalate, is identical, and the secondary, the reduction of the platinum or silver salt to the metallic state analogous.

The secondary processes are in both cases very much accelerated by the presence of potassium, sodium or ammonium oxalate, their reducing energy being much greater than that of the ferrous oxalate simple.

We are informed by Mr. C. Gentile that the matter of photographing on the grounds of the World's Fair is being considered now by the Ways and Means Committee, who have this matter in charge. He states "that there is not the slightest necessity for sending in a lot of petitions signed by amateurs."

THE PLATINOTYPE PROCESS.

The last number of The Photographic Times (No. 566) contains an article to complement my description of the platinotype process. This is perfectly proper and we tender our thanks to Mr. H. Edwards-Ficken to have done it. Good criticism is always welcome.

Mr. Edwards-Ficken recommends to the amateurs the buying of platinotype paper prepared ready for use. I think that the paper employed soon after its preparation gives better results, moreover all the preparations into which enters a salt of iron are subject to spontaneous slow decomposition in presence of organic matters when the least trace of moisture intervenes. But to prepare the paper one's self necessarily involves extra work, a special arrangement, requires a certain practice, time, and the latter is often a capital objection to the amateur. The case is different for the professional. Ready-prepared paper costs more than that one can make himself, and it is there an economy worth making.

Mr. Edwards-Ficken describes in detail the *modus operandi* of the development His manner is not exactly that we employ, but it gives good results, however; keeping the developing solution at a stationary temperature during the development of all the prints is certainly desirable, as it insures uniformity of action.

In our description of the process we have forgotten of pointing out what should be the character of the negatives for platinum printing. This Mr. Edwards-Fickens corrects. "*Dense* negatives yield the best prints in this process, and when it is intended to be used, the negatives may be developed for greater density than usual." This observation is important, and should be borne in mind. It is a rule that the negatives should be adapted to the printing process selected. But care should be taken not to over-develop to obtain density, for the prints will be devoid of half-tints in the white. In the shadows the details should be well marked, for all the processes based on the reduction of iron salts are liable to yield prints defective in delicate half-tints in the shadows. Here we must quote Mr. Edwards-Ficken as to the appearance of the image when sufficiently printed for development, which we also forgot to point out. "The safest guide will be found in the *faintest* appearance on the print of any small detail in the *densest* portion of the negative. When this has appeared, *however faintly*, all the remainder of the negative is printed deeply enough, no matter how little is actually visible in the imperfect yellowish-brown image showing here and there. It will come up when developing."

P. C. Duchochois.

CHAUTAUQUA LETTER.

Chautauqua looks its best again since we have had clear and fair weather, and the influx of visitors intending to remain here to the end of the season is growing to the usual proportions. All schools of the University and the special classes as well are organized, and the same old pleasant relations between instructors and instructed have been again established. Those coming to learn are earnest people and work hard to accomplish their purposes, and as a similar spirit prevails among the teachers there is no want of success. Our own school is in about the same condition as in previous years at the same time, our scholars are mainly young folks, beginners in the art, but during the last week many advanced students have joined. So far we have worked in a variety of branches just to suit individual demands, but with the beginning of next week rules will be followed more strictly, and groups of students be formed to pursue certain kinds of work.

Portraiture will probably be followed more

extensively than ever before, and as one advanced student has made several very fine negatives, head and bust pictures of ladies, the desire to do likewise is manifested by many. Landscaping and instantaneous work had been superseded by portraiture for several days, till by a mere accident all hands turned again towards their Triads and and Waterbury hand cameras.

For portraits we use the Carbutt special, as good and reliable a plate as can be found among the many different brands at our command, for instantaneous work the special of the same maker or the orthochromatic of highest sensitiveness. Our lessons prescribe to develop with pyro-soda, but with the exception of one lady, who attends now her fourth course, the S. P. C. para-amidophenol, or the never-failing eikoquinol are preferred by all.

A new kind of shutter, "the Elite," has been attached to our Waterbury B lenses, and we find it to work exceedingly well, and as it is comparatively much lower in price than others of similar construction, there is a good future for it, if not among others at least among our students. Much blue printing is done this year, owing to an excellent brand of paper, the "Satin, Jr." The work is done well. For general work the Bradfisch improved aristo paper is generally preferred, we tone and fix prints upon it in the combined bath mentioned on page 89, "American Annual of Photography" for 1892, a bath that has given entire satisfaction to whoever has tried it.

Messrs. Bradfisch & Pierce have sent for exhibition a very large and excellent collection of prints made upon their improved aristo and the matt-surface paper. Aside from the beauty of these photographs, they serve other very good purposes, that of being models of toning for the students. Our valued friend and supporter, John Carbutt, has also contributed to our exhibition. He displays several very large and handsome American landscapes, and what seems to be especially interesting to our many visitors, Norwegian scenes, by Doctor Mitchell, printed on platinum paper from orthochromatic films. Several new exhibits of students have arrived and adorn the walls of our rooms. Prominent among them are landscapes and studies of trees on orthochromatic plates by our old and faithful friend, Fred Keay of Boston, Rocky Mountain scenes of more than usual beauty and interest, by Wood, of Denver, a small collection of magnificent landscapes on albumen and platinum, by J. C. Carpenter, of Ohio, and very beautiful instantaneous views taken on the Bermuda Islands by M. A. Martin, of Pittsburgh.

Last week we held a public lantern exhibition on the lawn before the Athenæum. Only slides made by students were exhibited, and represented all interesting points on the Assembly Grounds, portraits of prominents divines, lake steamers and scenes incident to Chautauqua. Our audience could be counted by the thousands, and judging from the general applause most of the individual pictures received, the affair was a signal success. Since then many new slides of negatives taken during this season have been made, all of which will be shown publicly in August.

Our recognition day will probably be held on August 20th; and presumably again in the Children's Temple, because of its spacious hall and central location.

No special preparations have been made for the annual photographers' day as yet, but the exercises will probably be of the same character as those of the previous year.

Charles Ehrmann,
Instructor C. S. P.

Chautauqua Assembly Grounds, July 30, 1892.

FROM 5 x 7 TO 16 x 20.

Occasionally an amateur, who has been the happy possessor of a small camera, a 5 x 8 perhaps, and has after several years of hard work attained results considerably beyond mediocrity—who has come to realize the pleasures of definite knowledge, found only by a great amount of application through all sorts of discouragements finds himself often wishing for an apparatus of considerably larger size, to properly interpret our grand American scenery. Many times have we in finishing a small picture of bold effects or of rugged grandeur, thought, "how I wish that was large enough to frame," and when the larger picture was finished, were disappointed. Not in the natural characteristics of the scene, nor it seemed in the detailed work. Lights the same, developed the same, printed and toned to the same depth and shade. Still when it was, it was mounted and placed upon the wall or easel, with a "now we have it." On stepping back to the middle of the room, we at once see we haven't it at all, and say, "Why that's too dark, or too hard, or too flat. No life! no pluck!" It looked perfection when we were working in it, and viewed it near by. But as a picture to be seen at a distance, clearly, 'tis a failure. We give a prolonged whistle, come to the conclusion we don't know it quite all yet, and will have to think that over a little. And when we do think it over,

we come to realize some of the troubles. The two pictures of the same outdoor subject, the one large and the other small, required quite a little difference in their handling, and when our apparatus grew, our ideas should have grown as well. Probably in the matter of breadth will be found the most noticeable difference.

Though there are other points that will claim our attention, accuracy of detail is no doubt one of the fine points of photography. But the rendering of this detail must be determined by the final use to which the print is to be put. Pictures of large size naturally require a great amount of breadth and less detail, in opposition to small work mounted on cards or in albums, which will be taken in the hands, examined at close range and probably in a much stronger light. These small pictures will be sharp in focus, containing an amount of fine detail according to the subject and will be doubly entertaining for this reason. A good stereo. will give an illustration of my idea. But the more pretentious 16 x 20 has a much harder "row to hoe." It will perhaps be honored with a matt and frame and be obliged to hold its own with etchings, engravings, etc., of more or less recognized merit. In parenthesis, I wonder how many will smile at the mentioning of photos holding their own with etchings or engravings. Still, from my own observation, the facts of the case are, that the markets have been flooded, the past year or two, with these prints that are in every way inferior to a well-worked-out photograph. But to return. This picture then must have character and solidity, with an unmistakable scale of values running from the deep dark to the high light, with broad masses of light and shade, the half tones leading from one to the other. This will give us an effect of completeness and fill in the middle notes of our scale.

The values in a properly balanced picture, seem almost identical with the notes in the musical scale. The eye is satisfied only when each shade note is apparent. But in their absence has the feeling of something lacking, precisely as is detected by the ear when several notes of the musical scale are skipped. Loss of these shade notes may come from different sources. Under or over-exposure or development, faulty lighting or printing, will each in its way produce poor results. For instance, in our over-exposure we will find the middle notes or values present, while the extremes are entirely wanting. In under-exposure the high and low notes will be present with the middle of the scale quite or almost absent. Over-development will give us hard effects and the high notes only. Our printing gives us the lower or higher notes of the scale, in preponderance, according as the picture is under or over-printed. Loss of values though bad enough in a small picture are ruination to a large one. The detail helps the small one out, but the larger one viewed at a distance seems to emphasize this weakness—it looses its character and we have a flat insipid result. I have before me a photo taken on the coast of Maine, which is faulty in the other direction, having the hard effect. When examined and purchased unmounted, I thought I had the gem of the collection, but when mounted and viewed at a distance, the intermediate or half-tones seem to be wanting. What few details there are in the dark ledges and the foam of the sea have disappeared, and great patches of extreme high light and deep shade are about all that attracts without pleasing the eye. This was a very hard subject to treat properly both in exposure and development. The dark, black ledges in opposition to the dazzling foam of the sea, made more intense by bright sunlight, making about as difficult a combination as can well be imagined. Still it all the better illustrates the point.

In the matter of printing, four times out of five a large picture if printed and toned as dark as a small one, will when matted and framed, be found to give altogether too dark an effect. This I think will be one of the first defects noticed, and perhaps the most easily remedied, all of which goes to show that if we would aspire to large work we must learn that a sharp biting focus is neither necessary or desirable. That we should aim to attain broader and more comprehensive effects rather than a great amount of chipped up detail. That loss of views from any source are much more noticeable in a 16 x 20 than a 5 x 7. In fact we will find that there are many defects that are more conspicuous as the picture increases in size. It is the understanding, appreciating and remedying the thousand-and-one such points as the above that will in time raise the average snap-shot amateur to a place among the medal takers at our exhibitions. It is the constant study and finding out of the why-for of all sorts of artistic, chemical and mechanical difficulties that makes our art such a charming study and recreation among intelligent people, and fitly illustrates the quotation :

"Art is long, and Time is fleeting."

C. Alvord Washburn.

A STORMY TIME.

"Rash fellow that Jones—taking to photographing cyclones and all that for the newspapers."

"He probably wants to raise the wind."

NOTES ON SOME NEW RAPID ORTHOCHROMATIC COLLODIO-BROMIDE EMULSION PROCESSES.

GELATINE dry-plates have now taken such a hold on the photographic world that it would be almost useless to expect any general return to collodion whatever its advantages might be. For all ordinary purposes ready-made gelatine plates must remain the most convenient medium for the sensitive film. There are, however, many photographic operations in which certain qualities are required in the negative or transparency, which are far better obtainable with collodion than with gelatine, and this is the case with most of the copying processes used for the reproduction of drawings and works of art in line or half-tone. Here, in Calcutta, we are obliged to use the old wet-collodion process for all our copying work in the Survey of India Office, and the same is the case in most of the establishments in other parts of the world working process blocks and other photo-mechanical processes for reproduction of line-work. Now, as some of you may know, the practice of the wet-collodion process is attended with many inconveniences, in the way of nitrate of silver baths, which are difficult to preserve in good order and keep one's fingers in a state of perpetual blackness, the drying of the films and other troubles, which may be all avoided in working an emulsion process. As collodion processes go, the wet process is fairly sensitive, and though far below gelatine in sensitiveness, it is, as a rule, much quicker than the ordinary dry collodion processes, and for this reason the latter have so far as I know, not generally come into use in establishments like ours, where a large amount of copying work is done and wet collodion has so far held its own.

I have often thought that the experience gained in making the highly sensitive gelatine emulsions might possibly be applied to the preparation of very sensitive collodio-bromide emulsions, and it has, in fact, already been done by Capt. Abney and others, but with very little practical experience in emulsion making with collodion, one did not quite know what process would be likely to best answer for ordinary work.

When I was in Europe last year, I was told in Berlin of an orthochromatic collodion emulsion, prepared by Dr. E. Albert, of Munich, which was said to give very good results and to be very sensitive. So being afterwards in Munich I paid a visit to Dr. Albert, who very courteously showed me a good deal that was interesting, and I was specially impressed by the sight of his negatives of copies of paintings taken with his orthochromatic collodion emulsion. I have never before seen such fine negatives, full of the most brilliant soft gradation and detail, and of the beautiful violet-purple color of the best wet-collodion negatives which one misses so much in gelatine, and which indicates, moreover, an exceeding fineness of deposit. The process seemed a most valuable one, and I should have got some of the emulsion for trial, but was told that it would not keep in a hot climate. Dr. Albert's emulsion has been on sale in Europe for the last year or two, but little was known of the process of preparing it, except that the coloring solution contained one of the eosin dyes and some picrate of ammonia, the latter serving in place of a yellow screen.

Shortly after my return to Calcutta, last November, I read in *Paris Photographe*, M. Nadar's excellent monthly, an extract from the "*Correspondenz*," of a paper by Dr. A. Jonas, of Vienna, describing some experiments he had made, at Dr. Eder's suggestion, in preparing an emulsion similar to Dr. Albert's. It seemed to me worth trying these formulas, and when I did so I was quite surprised at the results obtained, and especially by the wonderful sensitiveness conferred on the emulsion by the addition of the strong picrated erythrosin-silver solution, so that the colored collodion emulsion was about as sensitive as ordinary gelatine dry-plates. No such enormous rise in sensitiveness is noticeable in orthochromatizing gelatine dry-plates with weaker erythrosin-silver solutions.

Dr. Jonas' method of working, as given at length in the *Photographisches Correspondenz* for July, 1891, is briefly as follows:

The employment of the silver and ammonia method of preparing the silver bromide emulsion, which is so successful with gelatine, does not answer so well with collodion, because the free ammonia acts injuriously on the collodion. This difficulty is overcome in the following process by neutralizing the free ammonia with acetic acid, and, moreover, the emulsion so obtained is exceedingly fine in the grain and creamy.

SOLUTION I.

Ammonium bromide	64 grammes
Distilled water.....	80 c.c.
Absolute alcohol	800 "
Thick collodion 4 per cent...	1,500 "
Glacial acetic acid....	65 "

The ammonia bromide is first dissolved in the water with heat, then the alcohol, collodion and acetic acid are added in order.

For the collodion, I have used a mixture of equal parts of 4 per cent. solutions of Schering's

celloidin and of a collodion made with Morson's pyroxyline, both in equal parts of ether and alcohol, the same as ordinarily made up in the office for copying maps, but thicker.

SOLUTION II.

Crystallized nitrate of silver.... 80 grammes.
Distilled water..... 50 c.c.

The silver salt is dissolved in the water with heat, and then a strong solution of ammonia is added in small portions till the precipitate is redissolved (this takes about 72 to 75 c.c.); 800 c.c. of alcohol warmed to about 45 deg. c. (113 deg. Fahr.) are then added. This solution should remain clear and colorless. If it turns brown the alcohol is impure. Both solutions can be prepared in daylight.

When solution II. is ready it is poured in a thin stream into No. I., the latter being well shaken meanwhile. This operation must be performed in a dark-room with orange light. Solution II. must be kept heated from 40 deg to 50 deg. c. (103.5 deg. to 122 deg. Fahr.), otherwise the silver-ammonia salt will crystallize out; it is desirable, therefore, to stand the solution from time to time in a water bath heated to the above temperature. The mixing of the above quantity of emulsion should take about ten minutes. The emulsion is well shaken up and tested for acidity. A little of it being poured on glass and wetted with water should show a slightly acid reaction. If alkaline, it is acidified by adding acetic acid drop by drop. It is then well shaken for about a quarter of an hour, and after standing for an hour is poured into five or six times its volume of water. The silver bromide collodion separated out is collected in a clean linen cloth, and the ends of the latter being tied so as to form a bag, is washed in running water for about a couple of hours. It is then finally washed with distilled water and spread out upon a thick layer of blotting-paper to dry, which takes one or two days. The dry silver bromide collodion can then be kept in black bottles in a dark place for use as required.

I found no difficulty in following Dr. Jonas' instructions, but the mixed emulsion was kept for a day before being washed, with the object of getting greater sensitiveness, and it might possibly be kept even longer with advantage, because I noticed that the unwashed emulsion gained sensitiveness by keeping, and also became much more uniform in texture, though thinner. After a week it became very thin.

To make the final emulsion dissolve

Silver bromide collodion..... 6 grammes.
Alcohol..... 40 c.c.
Ether..... 60 "

The sensitiveness of the emulsion is after an hour about ½ deg. Warnerke. After 24 hours' ripening at 60 deg. to 70 deg. F. it increases about two to three times, and the color of the silver bromide changes from red-violet to blue-violet.

All chemicals must be perfectly pure and the greatest cleanliness must be observed in all the vessels employed.

The mixed washed emulsion can be kept ready for use; some I prepared about a month ago is now in very good order.

I have found that the emulsion can also be used unwashed with good results. At first it gives rather dense pictures with very clear shadows, but after a few days it is more sensitive and the image not quite so dense and hard; the film also becomes more uniform in texture. After a week, though more sensitive, it gives thin images slightly inclined to fog with the para-amidaphenol developer, and the results obtained with the washed emulsion are certainly better. The unwashed emulsion would probably work well if used within three or four days of being made up, and would of course be more economical for work on the large scale.

Dr. Jonas gives very full details about the preparation of the coloring solutions. For coloring the emulsion, various dyes of the eosine series, or cyanine, may be used in combination with silver nitrate and alcoholic ammonia. Each 100 c.c. of the emulsion should contain 1.7 milligramme of silver nitrate and an equivalent amount of dye, as well as a certain quantity of picrate of ammonia and glycerine. The following solutions are prepared:

I.—EOSINE SOLUTION.

Eosine (yellow shade..... 4 grammes.
Distilled water..... 50 c.c.
Alcohol (96 per cent)..... 450 "

If erythrosine is used the proportions are the same.

II.—SILVER SOLUTION.

Silver nitrate..... 3.4 grammes.
Distilled water..... 50 c. c.

Strong solution of ammonia is added till the solution is clear and alcohol to make up 200 c.c.

III.—SOLUTION OF AMMONIUM PICRATE.

Picric acid ..... 2 grammes.
Distilled water..... 10 c.c.

Ammonia is added to neutralize the acid and make up 300 c.c.

These solutions are used in the following proportions:—

Solution I. (Eosin)	75 c.c.
" II.	30 "
" III.	30 "
Pure glycerin	20 "
Alcohol (96 per cent.)	45 "

The solution is allowed to settle for a day or two filtered, and 20 c.c. are added to 100 c.c. of the plain emulsion.

The formula for use with erythrosine differs slightly from the above.

Solution I. (Erythrosin)	75 c.c.
" II.	30 "
" III.	30 "
Pure glycerine	25 "
Alcohol (96 per cent.)	120 "
Distilled water	20 "

The muddy solution is allowed to stand for a quarter of an hour, and strong ammonia is dropped in till it becomes quite clear ; it is then allowed to stand for a day or two, filtered and is mixed with the emulsion in the same proportion as the above, *i.e.*, 20 c.c. to 100 c.c. of emulsion.

After the addition of the coloring solution the emulsion is well shaken and filtered through cotton-wool and is then ready for use. The colored emulsion keeps good only for one or two days and is best used on the day of preparation. It should, therefore, only be mixed in small quantities as required for use. Some colored emulsion was found to be absolutely insensitive after a week.

I have found that the difficulty of keeping the colored emulsion may be obviated by coating the plate with the plain emulsion, either washed or unwashed, then washing it under the tap and flowing over it the colored tincture of eosine or erythrosine diluted to half strength with water. In some cases this may be a more convenient way of working A solution containing

Erythrosine	1 gramme
Silver nitrate	1 "
Picric acid	1 "
Ammonia (sp. g. .880)....about	30 c.c.
Spirit of wine	500 "
Water	500 "

used as a bath has also given very good results.

Dr. Jonas says that emulsions colored with eosine gives soft, harmonious negatives, while the erythrosine gives more density and contrast. I have not yet tried eosine, but erythrosine has given me very bright pictures. In trials with wet collodion, made some years ago, I found that cyanosine gave by far the best results, but it does not seem to do so in this process.

J. Waterhouse.

(*To be continued.*)

Correspondence.

QUICK SHUTTERS.

To the Editor of THE PHOTOGRAPHIC TIMES :

Dear Sir: Your correspondent "A Handler of Many Shutters" should spend some of the time he gives to shutters in the study of the American language, and so qualify himself for discussions in it. He evidently has not the least comprehension of what I wrote in the article on the subject of shutters for short exposures, and I have no intention to occupy the columns of THE PHOTOGRAPHIC TIMES for his education. I was experimenting in rapid work when, in all probability, his experience in photography had got no further than being put up in a baby-chair to be "taken," and I suppose I have seen the best work that "instantaneous" photography can do. I know also the menning of words in our language, and when I write "quick" I mean to indicate something that occupies a very short space of time, which may be the fifth of a second or the five-hundredth ; and I probably know more of lenses than he does, if I can judge from what he writes. I give my opinion on that subject, that, for all-round landscape and other out-door work the lens of the "Rapid" type, either Ross, Dallmeyer, or other derivations from the original Steinheil symmetrical (or the new Zeiss Rapid, which has in some respects the advantage over that type, and in others is deficient), gives the best general results that can be got, though for the most rapid work done, it is not powerful enough. But the lens that will give much quicker results will not answer so well for the general work which the greater number of amateurs want to do. None but an absolute greenhorn needs to be told this. As between the old type of "Rapid" lens and the new Zeiss, I have not yet satisfied myself as to the superiority for general work, and suspend judgment. If "Handler" had understood print, he would have seen that the sentence he quotes as to the "diaphragming action" of the Iris shutter, is simply the objection I made to it and all similar shutters, a defect compensated in part by the better definition, but not done away with.

To Mr. Hemment I have only to say that here we don't consider the taking of a horse in the air as he jumps the fence a test of rapid work, and our club turns them out in numbers at every race or fox-hunt that comes off. Nor is the photographing of the ball in the air the highest result we know, for the cannon ball goes by in much less time and has been photographed, while Janssen's exposures in sun photographing—one three-thousandths of a second—are quick as compared with the baseball. All these things are relative, and, as I am not spending my time photographing "Rusie's" ball in the air, or even cannon-balls, but content myself with what ordinary nature offers me, landscape with cattle and bipeds, shipping, street scenes, and especially water in rapid motion, my acceptation of "quick" is moderate as compared with Mr. Hemment's standard, as his is moderate when compared with what has been done in photography. His picture of Niagara with the slowest speed of his Prosch Shutter may satisfy his ideal of "beautiful results," but it probably would not satisfy mine of rendering of running water. I have never seen a satisfactory photograph of water running rapidly past the camera—the best one I have seen is one I made myself with a shutter of my own construction, but it

is under-exposed in the shadows of the landscape. A shutter is quicker than it need be if it is too quick for the lens you use, and I find that the "Diaphragm" is as rapid as my "Rapid" lens requires, though neither the one nor the other is the maximum of attainment. Except under the *most* favorable circumstances, the "Rapid" will not render rapidly running water perfectly, and for these exceptional circumstances the "Diaphragm" is not quick enough; but for most, and, in fact, nearly all cases, both are "quick" enough for what general photographers—especially amateurs—want. If Mr. Hemment had taken the trouble to read what he criticises, he would have seen that what I praise in the shutter is not its high rapidity, but its exceptional combination of utilities and the extremely ingenious mechanism of it; but as he knows nothing about construction of a shutter, this will not have given him any pleasure, as it does to me, who was brought up in the midst of mechanism and invention. In this respect, nothing has been seen like it either in New York, London or Rome. As a combination of shutter and diaphragm—and so of great general convenience for studio or outdoors—it is unique, and this is all I claimed for it. As to rapidity, my own shutter is much quicker, but not half so serviceable. Mr. Hemment had better try again, if he wants to convict me of ignorance, either of shutters or of photographic work; and before doing so, he had better read what I have written a little more carefully than he seems to have done.

Yours truly,

ROME, July 16th. W. J. STILLMAN.

SUUM CUIQUE.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: The process described in the last issue of THE TIMES (No. 567), under the title of "A New Process of Reversing the Image," and attributed to Professor Rossigner, is in reality due to Captain Biny, Director of the French Department of Fortifications. See the "Bulletin of the French Society of Photography for 1881," page 130, where the process is described in detail. I think that THE TIMES had it translated and published it.

It is astonishing how often old, well-known processes are published by new photographers, and would-be inventors, but *suum cuique*, gentlemen!

Yours respectfully,

NEW YORK, August 3d. WM. X.

THE IRISH WIDOW.

MRS. MAGOOGIN WILL NEVER HAVE ANOTHER TINTYPE TAKEN AT CONEY ISLAND.

"Did ye uver have yer peckthur takened, Mrs. McGlaggerty?"

"No, but Oi had a chromo shtolen aff the mantel be a buke pedlar wanst, Mrs. Magoogin."

"Oh, Oi don't mane that—Oi mane did ye uver have yer photecgraft takened?"

"Nuver, Mrs. Magoogin."

"Thin yere in great look, Mrs. McGlaggerty," said the widow in a tone that left no doubt that her neighbor had a very fortunate escape. "Take my adwoice, me frind, an' don't go near thim. They'll make a howly show av yer face, so they will, an' ye'll be sarrier then aff a noospaper reporter kem around wid the wee ind av a short pincil and a bit av a buke that flaps boick that a way," indicating the opening of a notebook lengthwise, "med a dhrawin' av yer mug an' printid id fur the whole town to be laughin' at the nuxt mawrnin', Mrs. McGlaggerty. May Oi nuver laive this shpot aloive, me frind, aff Oi don't brain the nuxt man, ur woman ayther, that axes me to have me loikeness takened. Oi'll hammer the everlashtin' nuvers out av thim antil they luk worse nor a Pinkertin detective that has been given a reckoshay reception be a lot av Homeshtead stroikers, Mrs. McGlaggerty. An' Oi'll tell ye fwhy, me frind. Oi wint down to Cooney's Oisland agin lasht Soonda' to let the say brayzes whishk through me Rooshan blouse, as id were, an' the wild waves av the baich soothe me plashter parish brow—fwhich they did very exthravaganzically, Mrs. McGlaggerty, fur Oi was in th' wather takin' me free-an'-aisy bat' fwhin the storm kem up an' blew th' surf down the boick av me nick an' up into me nosthrils an' all but dhrowdid roight down dead intoirely. Oi injyed meself, oh, uver so mooch, me frind, an' fwhin the loife-savers dhrug me out on the baich an' began to rowl the salt wather out av me Oi thought Oi'd doie a laughin', id was all so quare an' foonny, d'ye see. But Oi got over it all roight, an' afther a schooner av beer ur two, fwhich they gev me to rewoive me, they sed. Oi was feelin' as a new shingle an' wint up an Scurf avenoo to see fwhat was goin' an in socoiety. An' Oi was walkin' along noice an' aisy-loike, tindin' quoietly to me own bizniss, fwhin a jood in his shirrut slaives waltzes up to me an' axes me aff Oi wantid me peckthur takened. He showed me some foine loikenesses av Queen Victoree and Prisidint Claivelan' an' towl me that Oi'd take a betther peckthur than ayther av thim put together, an' he'd make me wan that cud all but talk fur twinty-foive cints. Oi was be meself, Toozy bein' aff up to Glin Oislan' wud her noo beau—so Oi sez to meself, sez Oi, 'Here, begorry, is a chance to shupproise thim. Oi'll take me loikeniss home wud me an' say nuver a wurrud,' sez Oi, 'but shtand it up an the kitchin table, an' fwhin they come in they'll see id an' id'll paraloize thim,' sez Oi. Id was a splindid oidaya, warn't it, Mrs. McGlaggerty? But howld an till Oi tell ye how it wurruked. Oi wint in an' had me peckthur med an' ped fur id, an' fwhat d'ye think Oi got—an' id was takened be the lickerish lights, too—? Begorry. Oi gut nawthin' but a tintoype av a ghosht widout any nose or nick an' wud a mouth an her that was blacker than a Delancey sthreet cellar. 'Howly shmoke,' sez Oi, 'an' is this me?' sez Oi. 'Yis,' sez the photeographiler, 'an' a very gud loikeniss, too,' sez he. 'Id's purty dim, sor,' sez Oi. 'Blow yer breath an id fwhin ye get home,' sez he, 'an thin let it shtand tin hours in the noight air an' id 'll come out as clear as a crystal,' sez he. So Oi brought id home, Mrs. McGlaggerty, and blyew me breath an id an' left id an the table fur Toozy and Tammy. When they saw id Oi thought they'd both busht their soides laughin'. 'Fwhy this isn't a face at all, mudder,' sez Tammy. 'Id's a cushtard poie scared to death be a hungry man that wants to ait id wid a carvin' knoife,' sez he. 'Id's a croime agin socoiety, mammaw,' sez she, an' she flung id out in the yard. Oi wint out, pickt id up an' tuk another luk at id, an', upon me sowl, they were both roight. Id was abominible. Id luked no more loike me, me frind, than Oi luk loike a froyin' pan full av salt mackeril. Oh, but aff Oi had a howlt av that tintoyper wudn't Oi'd blyow me breath an him an taich him not to moonkey wud th'

innocince av a daycint widdy. Take my adwoice an' don't nuver go to Cooney's Oislan' fur photeografts, Mrs. McGlaggerty! They'll fool ye, so they will, me frind!"

John J. Jennings.

HOW HE FOUND OUT.

Photographer: I see you're a believer in second sight.

Visitor: How do you know?

Photographer: You've looked twice at the portraits of every beautiful woman in my studio!

The Editorial Table.

Photography Annual for 1892, Edited by Henry Sturmey. London: Iliffe & Son.

This is a well-filled volume, justifying its sub-title, "A Compendium of Information and Statistics of the Year." We regret to note, however, that many of the tables taken from "The American Annual of Photography and Photographic Times Almanac," are not credited to it. The fact that the advertisements are distributed throughout the reading matter also mars the value of the book, as it makes it difficult to find the reading matter. The book contains considerable valuable matter, and has a record of new things introduced throughout the year which is very valuable. It is illustrated by a number of interesting photographic reproductions.

The Downfall, by Emile Zola. New York: The Cassell Publishing Company.

This book is an account of the Franco-Prussian war, told with the wonderful skill of the eminent realist, and following the historical records so carefully that it is in itself an instructive history of the great modern struggle. The story is told from the standpoint of the common soldier, and is an interesting story, apart from the interest which attaches to the historical events themselves. It is freely illustrated by trustworthy pictures—the portrait of the Emperor, Napoleon III., in the frontispiece, being especially faithful.

The Optical Magic Lantern Journal and Photographic Enlarger has removed its offices from Salisbury Square, E. C., to 55–56 Chancery Lane, W. C., London.

Alfred Sellers, of 58 Fulton Street, New York City, has issued a catalogue and price-list of photo-engraving and zinc etching, which is very complete, and fully illustrated. A copy of the catalogue may be obtained we presume by addressing Mr. Sellers.

The Boston Camera Manufacturing Co.'s factories have been shut down for the month of August.

Dr. George L. Sinclair, of Halifax, N. S., sends us three prints made on Ilford printing-out paper, from yachting negatives, done with the Waterbury detective camera, which Dr. Sinclair writes, has been in steady use for five years. The pictures are highly interesting, and beautifully done, as indeed is everything which comes from Dr. Sinclair's camera.

Mr. C. T. von Herrman, of Raleigh. N. C., sends us a blue proof from an instantané, representing a group of young colored people. The picture is very good, and remarkably sharp for a drop-shutter exposure.

Queries and Answers.

311 M. W. L., Texas.—(1) Can a Gem lens be attached to your Wonder camera, and if so what will it cost? (2) What is the price of a good book of instruction, and can it be sent by mail?

311 (1) *Answer.*—The Gem lens will not do for the Wonder camera. It is intended for the making of small portraits but not for landscapes, of which we demand thorough sharpness. (2) "The Photographic Instructor," Third Edition, Scovill & Adams Co., publishers. Price, in paper, $1. Library Edition, $1.50. It can be sent by mail.

312 J. N. M.—(1) By your advice I have made the Woodbury emulsion and like it very much. Would you advise flowing or floating paper? (2) Also can any addition be made to make it print more rapidly? It is rather slow, at least more so than the Omega.

312 *Answer.*—(1) Flow the emulsion on the paper. The best way to do it in a small way is to fasten the dampened baryta gelatine paper on a stretcher. When dry it will be as tight as a drum-head; then you will find it quite easy to flow the emulsion over it. (2) You might try it to ripen the emulsion by digesting for two or three days in absolute alcohol.

313 BEGINNER.—Will you inform me what is a Waterhouse diaphragm?

313 *Answer.*—In the early times of photography diaphragms were inserted in the hood of combination objectives, immediately before the anterior lens. Mr. Lake Price suggested to cut a slit in the lens tube, at the centre of the two lenses, and place the diaphragm there. Dr. Waterhouse, of England, not the Colonel of the same name, as erroneously believed by many, introduced several improvements, and these diaphragms have been named after him ever since. Now that we use a variety of different diaphragms, it is very well for dealers and opticians to mention particularly what kind is attached to their objectives.

314 JARED M. is frightened very much about four pictures (portraits of mother and three daughters), and of which he has enclosed the negatives. They had been taken on Carbutt Eclipse plates, and show on the faces of every one of the four innumerable little spots and blotches. Generally the Carbutt plates have answered so well his purposes, what is the matter with them now?

314 *Answer.*—Jared need not be scared. There is nothing to be frightened about, and Mr. Carbutt's plates are as *right* as they always are. The little spots spoken of are nothing but faithful reproductions of freckles on the faces of the fair ladies. A good retoucher will take them all out, and for the future we advise you to use Carbutt orthochromatic plates for the photographing of freckled faces.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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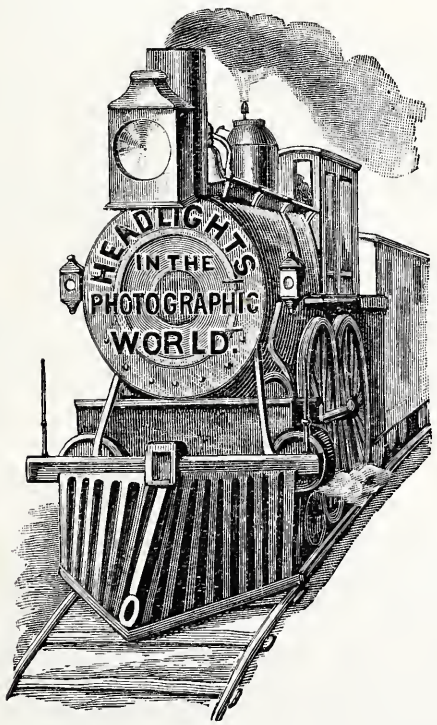
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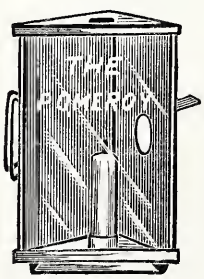
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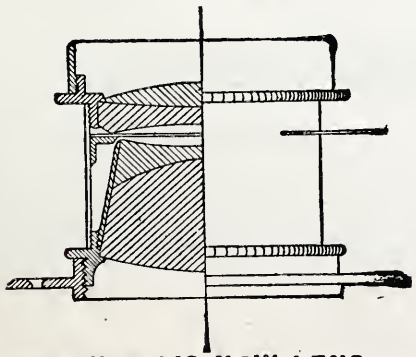
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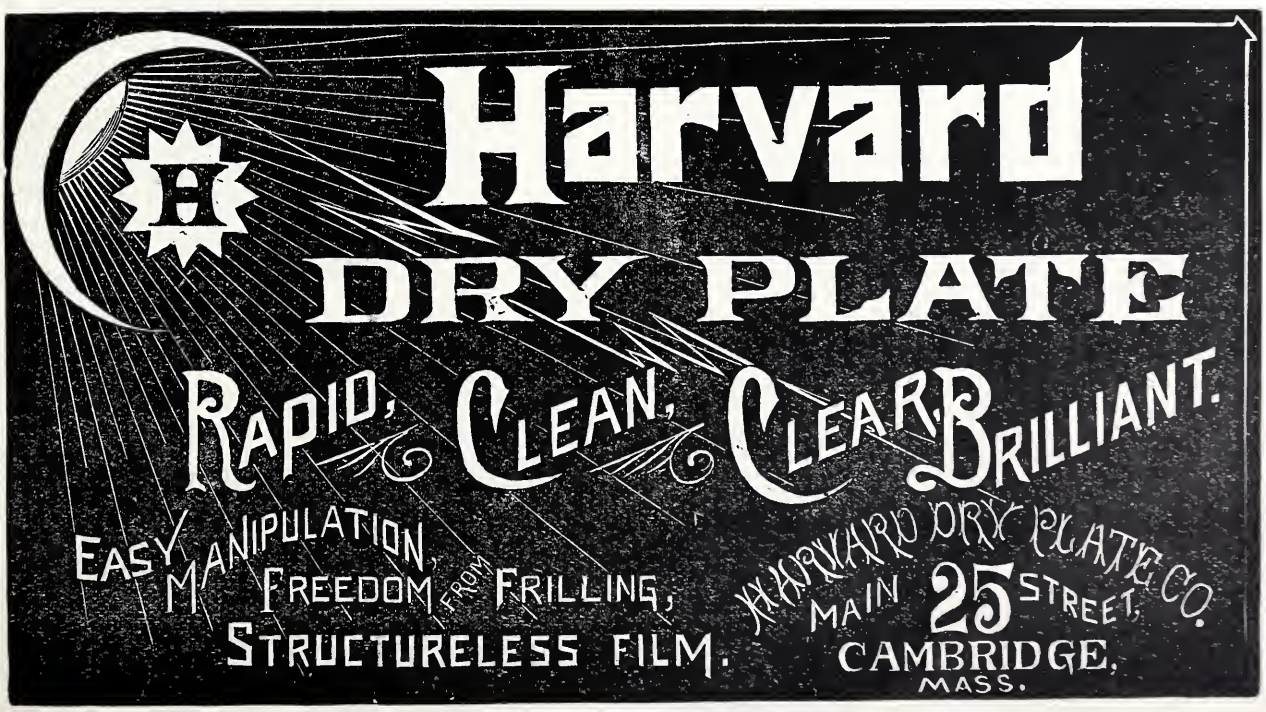
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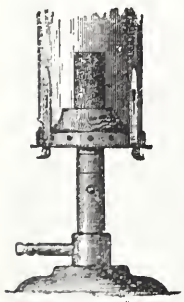
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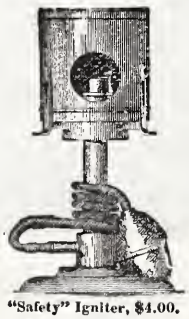
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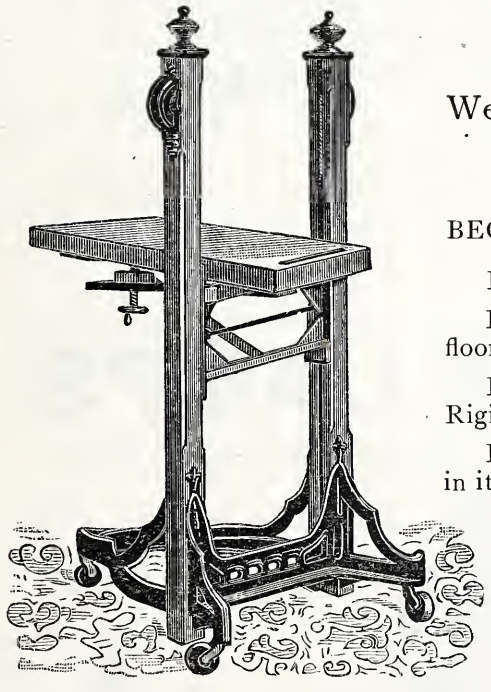
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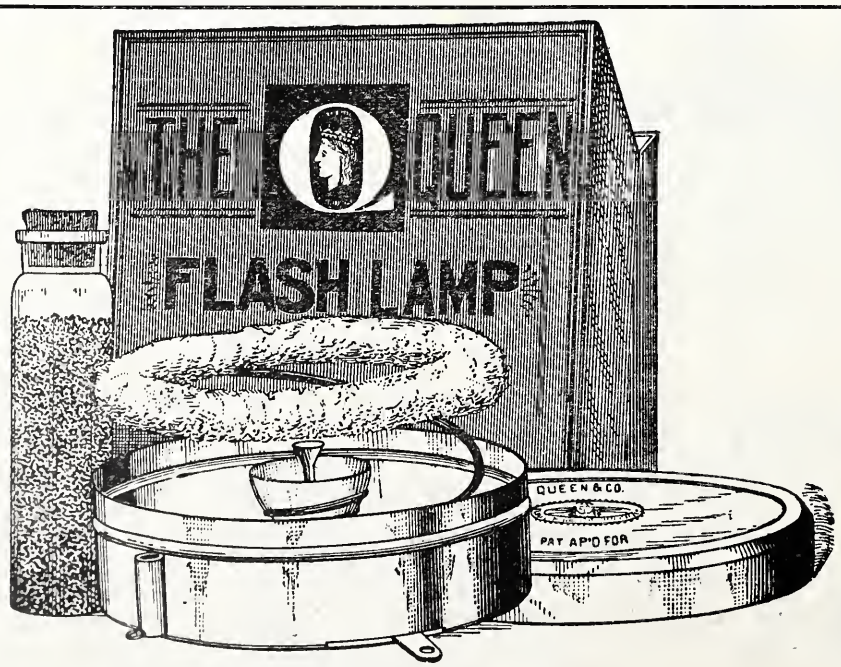
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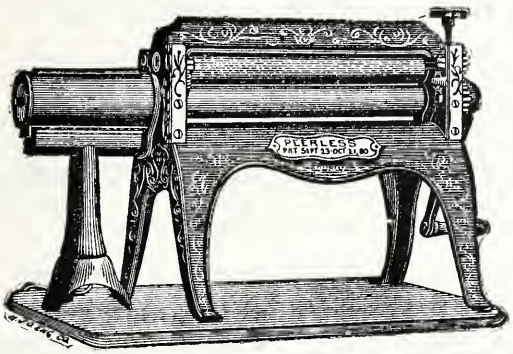
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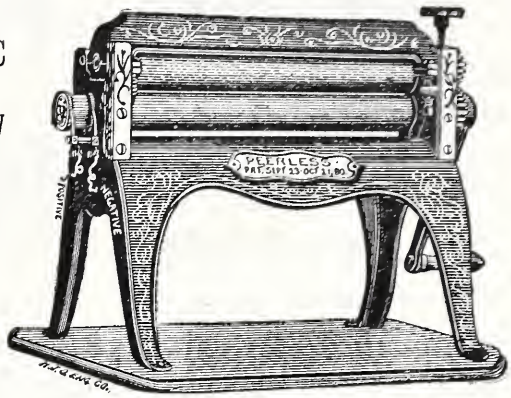
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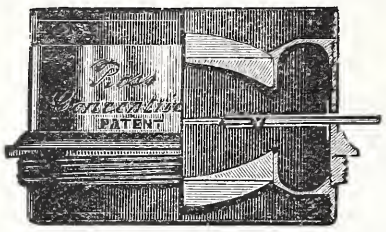
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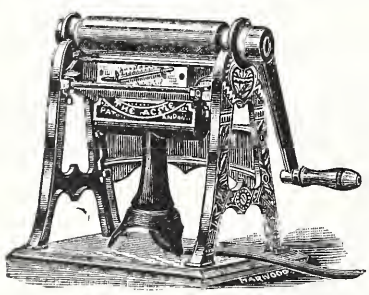
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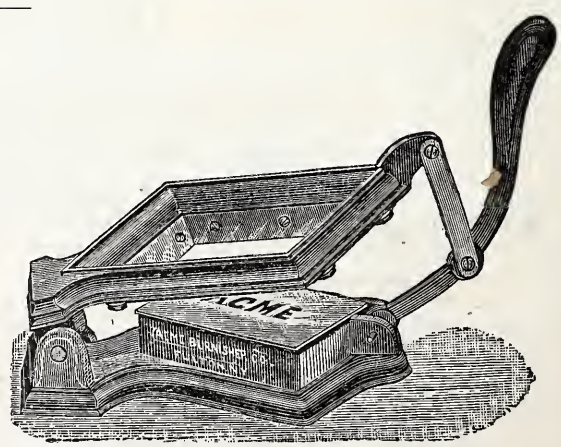
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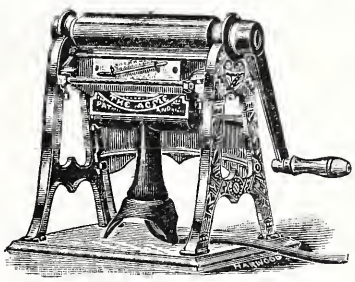
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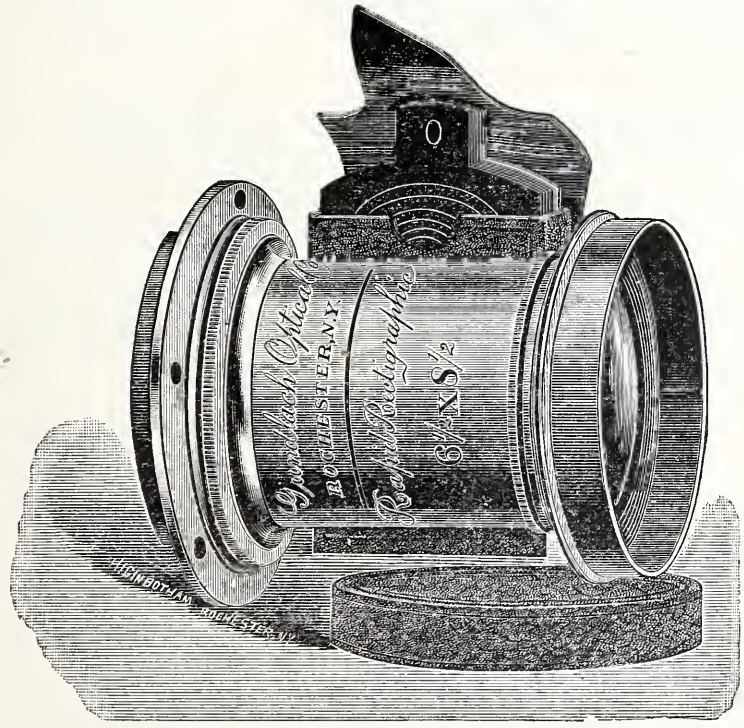
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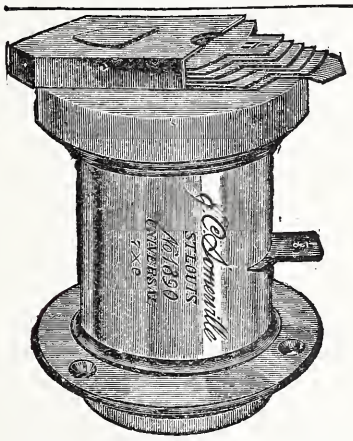
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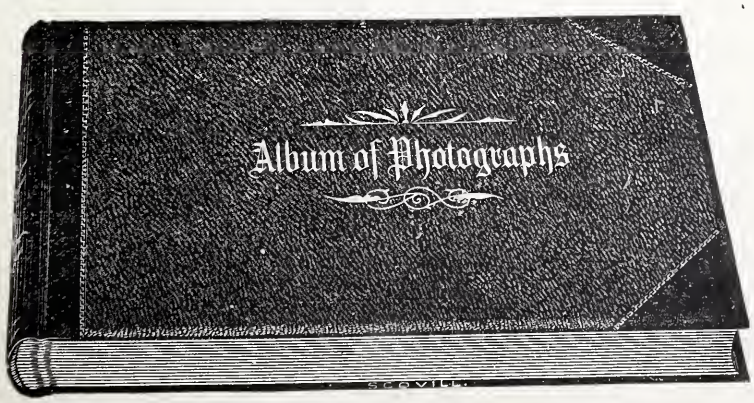
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CHARLES WAGER HULL, PHOTO

N.Y. PHOTOGRAVURE CO

YACHTING.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. AUGUST 19, 1892. No. 570.

YACHTING.

OUR picture this week is an appropriate one for this season of the year. It is from a negative by an old friend of THE PHOTOGRAPHIC TIMES, Mr. Charles Wager Hull, Superintendent of the American Institute, and an enthusiastic amateur photographer from the days of the old wet plate.

It is a characteristic view of yachting on Long Island Sound, made nearly opposite Larchmont, where Mr. Hull has his summer home. It depicts a regatta on rather a mild day. The photogravure plate is by the New York Photogravure Company.

PHOTO-TINCTURE.

A PROCESS TO OBTAIN PROOFS IN VARIOUS COLORS POSSESSING A GREAT RESISTANCE TO THE ACTION OF LIGHT, OF ACIDS, AND OF THE ALKALIES.

This process, devised by a a young amateur, Mr. Villain, was communicated by Mr. Balagny, in the name of the inventor, to the French Society of Photography, at its meeting of June 3, 1892.

Mr. Villain, said Mr. Balagny, has utilized the property which the salts of chromium possess to be transformed and fixed as mordants on tissues and on papers, under the action of light, to obtain proofs with various tints which he considers as offering a great resistance to the luminous action and that of the acids and the alkalies.

Mr. Villain acknowledged that the process is not exactly new, that in 1863 Kopp indicated the transformation of the chromate potassico-ammonic into a tinctorial mordant under the luminous influence, and that in 1872 M. Philippe took a patent for the obtaining of black images by means of the salts of chromium and of the chlorhydrate of aniline. But the proofs obtained by the latter had the great inconvenience of becoming green under the action of light, and the oxidation once commenced continued until the complete destruction of the fibre. Kopp indicated to the Industrial Society of Mulhouse, the use of tinctorial woods to obtain proofs in colors, but these products have not the permanence of that which Mr. Villain employs.

These products are new, for amongst them there are some which date from months and the others from a few years.

Mr. Villain added to salt of chromium some metavanate of ammonia, which gives a more energetic mordant. The coloring products are, for the most part, derived from anthracene, which are designated in commerce under the name of

Artificial alizarine;
Jsopurpurine;
Blue of alizarine s;
Black of alizarine s;
Black of alizarine r;
Galloflavine;
Purpurine;
Brown of anthracene;
Orange of alizarine;
Ceruleine;
Galleine;
Green of alizarine;
Yellow of alizarine;
Chestnut of alizarine;
Etc., etc.

All these products give, by being mixed, a varied series of tints. Aside from the exposure-time, the complete elimination of the chromium salt, the purity of the tissues, and, specially, of the paper, have a great influence on the result, for all these coloring substances are also fixing by the action of the mordants of aluminium, iron, copper and other metallic bodies, and give different tints. It is in this manner that Mr. Villain has obtained, by means of paper impregnated with aluminium and chromium, two entirely different tints; in the parts acted on by light he has obtained a black coloration by the salts of chromium, and in the other parts a rosy gray by the salts of aluminium.

These different products being fixed only on the

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parts where the mordant is already fixed and according to its concentration, only the parts not impressed by light form the whites of the proofs, unless one has employed impure substances or did not correctly operate.

But these proofs presenting a great resistance to chemical actions, one can, by dipping the proofs in a solution of chloride of lime obtain perfectly pure whites. Mr. Villain also recommends not to let the paper or the tissue dry at a temperature superior to 25 deg. C. (77 deg. Fahr.) for at 30 deg. C. (86 deg. Fahr.) the transforming action commences and manifests itself by the coloration of the whites.

The experiments of photo-tincture lately made by Mr. Villain before the Society of Studies have demonstrated the simplicity of his process and the exactitude of his data.

The applications of this process are numerous and one can rapidly fix enough mordant to obtain proofs by enlargement, and to permit of applying this process to the obtaining not only of screens, but also of veritable dyeing.

The cost is not great; for three or four francs one can dye by this process from 10 to 12 kilogrammes of tissue or of paper, which represents at least from 1,500 to 2,000 proofs 13 x 18 centimetres.

USE SEPARATE BATHS.

THE manufacturers of Aristotype paper are frequently receiving complaints in regard to the toning, especially when it is toned with the combined toning and fixing-bath. We have repeatedly advised the use of separate baths in THE PHOTOGRAPHIC TIMES, and in this position have been sustained by the highest experts, as well as by the most successful workers with the various brands of Aristotype paper. Messrs. Bradfisch & Pierce, manufacturers of the B. & P. Perfected Aristotype Paper, in a recent letter, writes as follows, in regard to this matter:

"The trouble with the yellowing of prints is due to using a combined bath during the hot weather. Prints in a combined bath should be toned very little and washed quickly, and no combined bath will produce such clear prints as separate toning and fixing. The latter method is best for those who want the best results. Combined baths are unreliable."

EDITORIAL NOTES.

UNDER the heading of *Gleanings from Old Books* we commence in this issue the publication of the curious and interesting experiments of Möser and of Robert Hunt, giving also a *compte rendu* of those lately made in the manner imagined by those two learned experimenters.

Until now the phenomena related in these articles have not received any practical application. We think it possible, however, to utilize some of them in the processes of Industrial Photography.

We shall experiment ourselves and report the results.

LAST Friday evening (August 5–6) we witnessed a very rare and splendid phenomenon which occurred at exactly half-past twelve, midnight, and lasted no more than four minutes.

The moon was shining in the dark blue sky, when after having emerged from a transparent cloud—a siro-cumulus—which was the only visible one then, and following its course for probably a minute, a halo at once appeared around it. Its extent was about three times the diameter of the moon. It was colored with the color of the rainbow, being violet in the centre, pale blue, then green-yellow and at the edge red-brown. As the colors disappeared with the halo, which was becoming smaller and smaller, they faded in the inverse order, the red remaining last.

Is not that what the metereologists call a lunar rain-bow?

GLEANINGS FROM OLD BOOKS.

ON THE IMAGES OF MÖSER.

It is known that when an iodized silver plate is exposed for a certain time to the image of the camera-obscura, a visible impression is obtained without subjecting the plate to the vapor of mercury; but this image is inverted or negative, *i.e.*, that the lights are represented in black, and the shadows, on the contrary, appear as lights. In the operations of the daguerreotype the exposure is not so prolonged. When the plate is removed from the camera nothing is visible, but the iodized surface is sufficiently modified to allow the image to appear when exposed to the vapor of mercury. The experiments of Mr. Edm. Becquerel have shown that an exceedingly short exposure suffices to impress the iodized plate, although the impression could not be rendered apparent by the vapor of mercury; but that, if the plate were then exposed to the sunlight under red glasses, the iodide of silver would continue to be impressed and the image capable, after this new action, to be developed by the mercurial vapors. Hence the distinction established by Mr. Becquerel between the actinic or exciting rays and the continuating rays.

Mr. L. Möser, of Königsberg, has constated the results of Mr. Becquerel's experiments and observed new phenomena.

Mr. Möser ascertained that it was necessary that the iodized plate be exposed during a certain period to admit the image being developed under the red glass; but if the action were too prolonged under the colored glass, then the image would appear directly as a negative without subjecting it to the vapor of mercury. Mr. A. Gaudin had already discovered that the *yellow* glasses were in this case much more actinic than the red.

Mr. Möser also observed this curious phenomenon: An iodized plate which has been exposed in the camera for a period sufficient to give by the vapor of mercury the ordinary positive image, was exposed to sunlight under a yellow glass; no image was visible, but immediately a negative image was formed, which disappeared after a few moments, and then reappeared as a positive in from 10 to 15 minutes.*

By using red glass, Mr. Möser has never been able to obtain a positive image, whatever was the time of exposure. He has ascertained, on the contrary, that this transformation was effected under green glasses.

In his experiments, Mr. Möser was led to make the following distinction in the action of the rays of the spectrum:

On the intact iodized film the violet and the blue rays are the only active ones; they produce a commencement of alteration which is not immediately visible, but which becomes apparent by the mercurial vapors, provided this alteration be of a certain extent. But two distinct periods can be observed during this progressive alteration of the iodized film: at the end of the first period the film is so much modified that the red and orange rays can act as well as blue and the violet, but the yellow does not act yet, for when the plate is removed too soon from the camera obscura those rays are completely inactive. At the end of the second period the green and yellow rays act, and the plate is then nearly to the point where the image becomes completely developed under the influence of the vapor of mercury.

An iodized plate was placed in the camera and exposed for more than an hour directed on the object lighted by the sun in order to obtain a very distinct negative image; this image was then placed in full sunshine. After a few minutes the negative image disappeared, and in its place was formed a positive image, just as well defined, in which the lights were of a greenish tint and the shadows of a deep red-brown. Mr. Möser thinks that this last effect is due to the yellow and green rays.

As it is seen by these experiments, two images are successively and directly formed on the plate. Mr. Möser has researched whether other images were not also produced. To that effect he prepared two plates, one with iodine and the other with chloride of iodine, and placed them each in a camera, the lenses directed on different houses. The camera was placed in a room completely dark, to avoid the action of diffused light. The season was propitious for the experiment; it was in winter. The exposure was prolonged during thirteen days; after that period the images obtained were *positive* on the two plates. The plate prepared with chloride of iodine was the most brilliant, the lights being of a fine sky-blue and the shadows of a very intense red. Mr. Möser considers these images as being the first positive. The chloride of iodide plate having been immersed in a solution of hyposulphite of soda, the colors instantly disappeared and a *negative* image was produced.

Mr. Möser made afterwards a series of experiments with polarized rays in order to research whether the rays which produce the image were different, in this respect, from the luminous rays, but he could not state any difference. In placing in front of the lens of the camera a prism of carbonated lime achromatized for one of the images and directing the lens on a statue, he obtained two images perfectly distinct and well-defined although only one appeared achromatic to the eyes.

Mr. Möser took equally some proofs of the colored rings and figures produced by the polarized light in crystalline plates, tempered glasses, etc.; in all these circumstances the images were similar to those seen by the direct vision.

In another series of experiments from which we select the following, Mr. Möser shows that "*when two bodies are sufficiently near they impress their images upon each other.*" It is known that if one writes with certain substances on a well-polished glass plate, and then rubs off the writing and perfectly cleans the surface, that this writing always reappears by breathing upon it. Mr. Möser has ascertained that this phenomenon was produced on any well-polished bodies, and whatever be the matter with which the writing has been made. Thus it is obtained by breathing upon a glass and tracing upon it immediately after, a design with a clean brush. Mr. V. Regnault thinks that in the latter case the small quantity of greasy matter which is constantly to be found on the surface of

* This is the first observation of the reversal, lately studied by Mr. Janssen.

bodies, or which may be projected by the breath, can, in being differently deposited on the surface of the plate, so modify the nature of this surface as to render the modification sensible by unequal reflections of light produced on the unequal deposits of the vapor.

Mr. Möser has ascertained that these images were easily developed by the vapor of iodine and of mercury. In the case when the image is not obtained with iodine alone it will usually appear by submitting the plate to the vapor of mercury.

A plate of silver was iodized after the manner of Daguerre and upon it were placed various objects, metallic and non-metallic medals; the object being removed, it was often possible to recognize exactly its place; but it was especially in exposing the plate to the mercurial vapors that the image appeared sufficiently distinct to see the faces, the letters, etc. This experiment takes place as well in complete darkness as under the influence of light.

An iodized plate treated in this manner did not show any image when the object was removed, but the image immediately appeared by exposure to diffused light or to sunshine. Even an image can be obtained on a well-polished silver plate not iodized in submitting it, after contact with the object, to the vapor of mercury. The experiment succeeded also with other metals.

Mr. Möser concludes from these experiments that when a surface has been touched in certain parts by a body, it acquires the property of condensing the vapors of substances—which possess for it a certain force of adhesion—in a different manner on the parts touched than on the others, thus the contact would produce a modification similar to that of the action of light. The following experiment is also very remarkable: A silver plate was iodized in the night and in complete darkness; upon it were then placed a medal cut in an agate, an engraved metallic plate, a horn ring, etc., the plate was afterwards submitted to the vapor of mercury and the image of all these objects was perfectly reproduced. The same phenomenon was also produced in exposing the plate, after the contact, to diffused light or to the solar rays, or under colored glasses. But in the latter case only traces of the images were obtained under the red and yellow glasses; under the violet glass the impressions were very distinct.

These experiments show that by contact, modifications, similar to those originated by light, are produced on the surfaces of polished bodies. But the most extraordinary result obtained by Mr. Möser is that the same phenomenon is produced in the most complete darkness by bodies placed at some distance from each other, *i.e.*, that when two bodies are sufficiently near, they impress their image one on the other. The experiment has been made in the following manner: the plates and the objects producing the images were placed in a closed box which was itself placed in a dark room and the images were sometimes produced in less than ten minutes.

Mr. Möser has researched whether the phosphorescence did not play a part in these phenomena, but he could not observe any difference between the action of a body which has been kept in the dark for a certain period and that of another body exposed to sunshine for many hours.

The experiments on the images of Möser obtained in the dark at very small distances have been repeated in the presence of Humboldt by Messrs. Aschersohn and Enk, the astronomers. An image engraved in intaglio on a plate of alloy has been placed on a well-polished silver plate, not iodized, during twenty minutes; the image was not very apparent, but became distinct in iodizing the plate and submitting it to mercury. In another instance a cameo with inscriptions was placed on the silver plate, and the characters were perfectly reproduced.

Mr. Aschersohn has also obtained traces of very distinct images in placing an engraved alloyed plate at a distance of about a millimetre from an iodized silver plate.

The results of his researches are thus summed up by Mr. Möser:

All bodies radiate light even in the dark.

The light does not appear to be allied to the phosphorescence, for there is no difference perceived, whether the bodies have been kept long in the dark, or whether they have been just exposed to daylight or to direct solar light.

Two bodies constantly impress their images on each other, even in complete darkness.

However, in order that the image be appreciable, it is necessary, on account of the divergence of the rays, that the distance of the bodies should not be very considerable.

To render the image visible, the vapor of water, mercury, iodine, etc., may be used.

*There exists latent light as well as latent heat.**

* See Comptes Rendus, Vol. XV., p. 119 (1840).

(*To be continued.*)

THE PHOTOGRAPHIC CONVENTION OF THE UNITED KINGDOM AND GREAT BRITAIN.

The Edinburgh meeting of the British National Photographic Organization was opened on Monday, July 11th, in the Hall of the Royal Scottish Geographical Society, with President Davison in the Chair. The annual Presidential Address was delivered in the evening, after which a lantern exhibition was held. Tuesday an excursion was participated in to Melrose and Dryburgh. Wednesday morning at ten o'clock the general meeting occurred, and in the afternoon and evening other meetings were held in which the various papers were read, some of which we shall re-print in subsequent issues of the magazine. Thursday morning were excursions to St. Andrew and Dunfermline, and in the evening other papers were read. Friday other excursions were participated in and in the evening occurred the dinner and smoking concert. Saturday evening the Council meeting was held which closed the proceedings of the week. Mr. George Mason, of Glasgow, was unanimously elected President for the ensuing year, and Plymouth was chosen for the place for holding the meeting in 1893.

PHOTOGRAVURE.

[Read before the Photogravure Society of Great Britain.]

(*Continued from page* 416 *and concluded*).

Art Aspects.

The failure of so much of the old copper and steel plate engraving, follows rather from the business demand than from the artistic, or at least it is equally divided. Cheapness was called for and photogravure plates of a fair quality can be made cheaply, but they cannot be printed cheaper because the process is identical. Line engravings in steel are printed very cheaply because a clean surface is all that is desired, and steel easily yields it, but steel engravings are slow and hard to produce. Copper etchings are not so hard to produce, but even when steel faced they generally give trouble through being finished with very fine work. Mezzotint costs a deal to print, but here is the closest rival of photogravure, and it costs, say, twice as much to print as the photographic rival. The artist's own particular feeling is far different and merits chief attention because sooner or later it is what the artist feels that the public will also feel, and it is right that the creative mind should lead the receptive mind. This being granted it follows that the artist's idea of a perfect rendering in printing ink should be consulted. When we cannot consult it, it will be needful on our own responsibility to render it not with a mean and niggard neatness, nor with a rough blundering ruggedness. If I might define the ideal photogravure, I would say that the touch should be clearly perceived, but so also should the transparency or opacity of the original be rendered. This is a hard thing, but let it be remembered that the old mezzotint engraver would in his best work give two or more distinct tints, one fine, another coarse on top of it, and the result was increased transparency.

When they rock a plate there is one tint all of one size, that is when they first prepare a plate. When they scrape that, it is converted into a gradation of one degree. They find it does not hold ink enough. They now take a bigger rocker and go over all that work; and the peculiarity of it is—the rocker that they pass over it having a larger arc—that it goes lightly on the hollows, and the hollows are the lights. In the mezzotint method *these* (hollows) are the lights, having the little digs in them; *these* (hills) are the darks, having the deep digs in them. So that, when the rocker goes over it, it opens the hollows a good deal, so that re-rocking does not destroy detail to the extent that one would think; and a very light scraping over all these parts is easily done, and the result is that you have two tints, a bigger tint and a smaller tint. Now, if you go over the road to that institution (British Museum), you can see in the Print Room all sorts of mezzotint engravings, and you will find that the best are those which are twice rocked, some are even three times rocked and three times scraped out, and sometimes they rock and scrape out portions only. The consequence is that the old plates were extremely rich—I cannot see my way to do that in processing.

Thus I do not like a hard, equal tint in photogravure if it is to render the best result. Rather let one granulation cover another and one procedure be seen through another. I am very particular about this, because now we approach a very big subject—half-tone in relief. Let one texture be seen through another texture. It is a better thing than graduating the texture according to the color. That is very good, I will allow; but every part of the plate should have more than one texture upon it, and then you get transparency. Then I find the great difficulty in meeting art requirements lies in the narrowness of the photographic scale as compared with that of the painter; our modern dry plates certainly when well handled give a nice range of tone, but the negative is not the end of

the work, and in all the *physical work* which follows I have found the scale much cramped at both ends; I have to make my lights and also my darks to a large extent artificially. We cannot help it. Bichromate to satisfy an artist ought to bite into the blacks deeper and deeper as it goes, but it does not —it stops. Where the gradation of light is in a steady ratio, the gradation of printing starts with a fair effort, and then it gradually gets more flat; and where we want the tones to grow and grow, they do not grow, the reason being generally that it is full of pigment. It is only when there is no pigment in it that you get a really good scale. I steadily refuse to see in work turned straight off at one operation any good result if from a full-toned subject.

Relief.

Photogravure has now strangely invaded the letter-press department. It is one of the most curious and also most attractive marks of progress to see this thing, for the many blocks in half-tone now made are really photogravure plates in negative form, giving smooth places for black, and rough for light, instead of the reverse; but physically the difference is slight. (Mr. Dawson here exhibited four prints on one sheet, two being on a copper-plate and two on letter-press, remarking that the little plates in the various art *brochures* now so popular were all identical with photogravure plates, even to a large degree physically. There were differences, but they were slight.) It still remains to be noted that all the previous rules as to detail and transparency must apply, there can be no hard, flinty uniformity in the tint if it is to be approved by careful judges. Of course some printing by machine is much rougher than others, and always must be, but it will not alter the proposition; it thus follows that the hard, square, crossed tint, however neat and regular, must be superseded sooner or later; indeed regular mechanical work must give place to sympathetic rendering. Of course, this lies in the future, but it presses already, and has pressed; all artists say, "I hate that square grain," and a publisher will say, "I hate it too, but if it must be there let it be too fine for me to see it."

It should thus be borne in mind that when worked with that special view various methods hitherto employed for making an intaglio plate are suitable for the making of a relief photogravure. The vast bulk of this work is done by the old process of Niepce without any variation by printing into a thin layer of bitumen, developing, and biting out with several stoppings. In France intaglio plates are constantly produced in this way. There is a large republished series of Albert Durer, and they are all done in that way; they are bitten through a thin film of bitumen, and to make them deeper a man goes over them with a graver. The Pretsch process is a simple swelled gelatine surface. It has the advantage of not having pigment in the gelatine. These (shown) are Pretsch plates. Pretsch himself died long ago, and so far as I am aware no one has ever worked the process but myself. They can be printed in relief as well as in intaglio. Another way is by the Klic process, which renders most of the tints sweetly and consecutively, but is rather fine in the grain, and wants very careful rebiting to produce a printing block. And the worst part of rebiting, however skilful, is the necessary stopping-out, which will always show itself. It is the want of a real, true, good method of photogravure in relief which keeps back its employment for scientific work where it is not lawful to touch with the hand to help out any matter of detail. If a man brings a scientific subject he wants it correct, he does not want a sight of handwork on it, it would destroy its value. In anatomical plates it is impossible to have a method that demands the help of the hand. Of course there is a difference in *demanding* the help of the hand and having a little now and then, occasionally. But I do not despair of arriving at this point of perfect reproduction in relief where management and skill can be made to supersede any mere handwork.

Color.

Printing in color shall conclude my rather vagrant paper, but there is a strong affection in the English mind for color in prints; and from the earliest days of printing this has been observable. The missals which the monks were given to illuminating were followed by early printed books with the printed illuminations colored by hand.

By the plate method color is most suited to the lighter class of subject. As the tint gets darker the color is found to be unable to give the required depth and power unless the plate is correspondingly deep. It however remains that the photogravure intaglio plate is the sweetest method yet known for printing in colors. Sometimes a water-color drawing comes out so perfectly that you really cannot tell the copy by the side of it, and when it is known that this colored copy is a production of the press capable of multiplication, the result is all the more surprising. This way of color printing lends itself to very subtle blendings of tint such as are quite unknown to other modes;

but although producible in number, they are not very easy to do excellently well, and it is very usual to have to go over them afterwards with water color. Consequently they are valuable, and, as prints go, rather scarce. But they are well worth producing, for the simple reason that the photogravure gives us the artist's touch, and this adds the charm of color, thus bringing us very near to the artist. And, as I began, so I conclude with the keynote, that nearness to the artist is the most worthy aim of all reproductive methods. When water-color in its light touches is produced, it still remains to produce oil-color in its power, and very lovely I feel it will be to see this happy result.

It may be asked of me if I see any way of printing naturally reproduced plates with nature's selected tints. There was a method years ago for doing parcel plates in three or more colors by extracting them from an already prepared plate engraved in the ordinary way. There would be a mezzotint plate, and the areas of green and blue and so on were mapped out. Then you would electro copies, and scrape out from one what was not wanted for blue, from another what was not wanted for red, from a third what was not wanted for yellow. The consequence was that by printing in careful register you got a very decent color result, and one of my copper-plate printers once used to print them. They were very nice at times, but of course entailed three or four printings, and register in copper-plate is a very difficult business. The process was patented, and some old printers still living have printed them. The paper was good and strong, so as to print three or four times in the copper-plate press for the various colors without expanding and destroying register. Now, the nature-selected tints will depend on their results upon the limitations of this old, old process. I do not see how there is any way of inking a plate by an automatic method, and of course it must be by the medium of printing ink that the thing must be done. I do not see any way of inking a plate in nature's colors; and on the whole I incline towards making a nature monochrome plate and inking it in to taste. It must be remembered that by parcel or register printing on the copper-plate press the delightful plate-mark and broad margin are impossible, but by color printing, as above described, these are preserved.

A. Dawson.

AN EXPERT'S ENJOYMENT.

"He's great at making pictures with a hand camera."
"Yes, it's a regular *snap* for him."

HALF-TONE PHOTO-BLOCK PRINTING.

While in Europe last year (says Colonel Waterhouse, the author of this article) I obtained from America some glass-ruled screens from two makers, one of whom produces his screens direct on glass, and the other by photography. Both of these kinds of screens have given much better results than anything we had tried before, and with one of the finest screens ruled on glass—150 lines to the inch, which Mr. Levy kindly sent me for trial—the process seemed to go almost automatically.

The usual way of using these screens is to place them in front of the sensitive plate, leaving a small space between, which may either be fixed or varied according to the subject to be reproduced; or the screen may be placed in front of a transparency of the subject to be reproduced and a negative made in the copying camera. The negatives are usually taken by the wet-collodion process as giving the clearest and sharpest results, and have to be intensified in the same way as ordinary black and white negatives, so that the blacks may be nearly opaque and the clear spaces as transparent as possible. The best way of doing this is with copper bromide and silver nitrate, followed, if necessary, by treatment with hydrosulphate of ammonia. The negative should show an image in good gradation, but broken up into a network enclosing small points, varying in size and character according to the amount of exposure received in different parts of the film. In the darkest parts of the negative, which represent the lights or white spaces of the finished print, these points have the appearance of small transparent dots joined by opaque spaces; and as the negative increases in transparency, corresponding to the increasing depths of shade in the print, the transparent dots increase in size and the opaque spaces decrease, till in the deepest shadows the distribution of light and shade in the dots and spaces is quite reversed, and the negative image is formed by very small opaque dots joined by transparent spaces, and finally, in the deepest shadows of all, by complete transparency.

Having obtained a good grained negative, the rest of the process is very simple. The image may be etched on copper or zinc plates in various ways using either a thin film of asphalt or of bichromated albumen, etc., as the sensitive surface. It must be noted, however, that if the image is printed directly on the metal surface a *reversed* negative will be required. Zinc plates seem to be ordinarily used for these blocks and offer more facilities for deep biting when necessary; but we have found thin copper-plates in many ways more convenient and we make them easily for ourselves by electro-

typing from a highly polished copper-plate. The plates we use are about the thickness of a stout card, quite flexible, and can easily be cut with shears.

The first thing is to fix a fine dust-grain of powdered asphaltum upon the clean polished surface of the copper-plate, just in the same way as is done for the ordinary intaglio photo-etching process. The grain should be very fine, so as to be eaten away during the etching of the image, but just sufficient to hold down the gelatine image. A print is now taken from the grained negative upon the ordinary standard brown autotype (carbon) tissue, transferred under water to the prepared thin copper-plate and developed in hot water in the ordinary way. A quantity of prints may be developed upon the same plate and etched together or separately according to the requirements of the various subjects. The pigment prints should be made in sunshine and require an exposure of about two minutes. After development the images are dried off in the usual way with spirit of wine, and parts not requiring to be etched, as well as the back of the plate, are painted over with asphalt varnish to protect them from the etching fluid.

Before etching, the prints should be carefully examined to see that there are no defective parts, and especially that the grain is crisp and sharp; the slightest want of contact in the printing-frame will spoil the result.

The copper-plate bearing the gelatine image is now placed in a solution of perchloride of iron at 44 degrees Baumé, and the process of etching is carefully watched, the biting being allowed to continue for 10 or 12 minutes after the first signs of action, or until the greater part of the image is etched; the plate is then placed in a weaker solution of perchloride at 40 degrees Baumé and left in this for another 6 or 8 minutes until every part of the image has been eaten into the copper except the deepest shadows. The gelatine image is then washed off in a strong current of water and the plate cleaned with ammonia and chalk. If the etching has been properly carried out, a perfect image in relief will now be obtained with every line and dot of the grained negative reproduced clear and sharp. One advantage of this mode of etching is that the grain is not underbitten; the finest lines and dots are always perfect, because if the finer parts should be over-etched, the image is attacked by the perchloride on the surface without removing the gelatine film, as would be the case in etching an image in asphalt or fatty ink. The result is that the lights of the picture are slightly below the level of the deep shadows, but not sufficiently so to interfere with the printing; in fact, this may assist it by causing the deeper shadows to take up more ink than the lights, and so form a natural graduated method of overlaying, so important in typographic printing. The plate now obtained, though fairly deep, is not sufficiently so for printing purposes, and recourse must be had to rebiting, which is the most important and delicate part of the process. For this purpose a hard gelatine or smooth rubber roller should be used, and the image is very carefully rolled up with an ink composed of good lithographic ink and black wax thinned down with sufficient lithographic varnish to just make it workable on the slab, the ink being as hard as possible. The black wax composition is similar to that used for making electrotyping moulds and is made of—

Spermaceti	56 parts
Stearic acid	26 parts
White wax	24 parts
Asphalt	9 parts

melted together.

With due care the image is easily rolled up with this composition, and it forms such a powerful resistant to the etching solution that a very thin film will be found sufficient to protect the image. After rolling-in, the plate is slightly warmed over a gas-stove and the back of it and the margins of the picture again painted over with asphalt varnish. It is then put into a 38 degree Baumé solution of perchloride of iron, and should stand about two minutes' etching; this will deepen the image considerably, but may have to be repeated a second and sometimes a third time before sufficient depth is obtained, care being taken that between each biting the plate is thoroughly cleaned with turpentine and benzole. A great deal can be done with the plate to improve it during the process of rebiting by painting out and biting only such parts of the plate as may require it; but this depends upon the requirements of the subject and the skill of the operator.

When the etching is quite finished the plate is cut to the size required, leaving, as a rule, a narrow black line or border round the subject, and it is then ready for mounting. Mr. Turner has adopted an ingenious way of doing this which may be novel. The copper-plates being very thin, are fastened down to blocks of wood (type high) with strong bichromated gelatine, and hold exceedingly well; though zinc plates treated in the same way do not seem to hold so well. The back of the plate is first carefully cleaned with turpentine and

afterwards with a strong solution of caustic potash, in order to free it from all traces of greasy matter, which might prevent adherence. It is then dried, and a sheet of white tissue-paper is attached to it with a solution of :

Gelatine	8 parts
Water	32 parts
Potash bichromate	1 part.

Upon the wooden block a sheet of thin drawing paper is attached with the same solution. The tissue paper on the back of the plate and the paper on the wooden block are now thickly coated with the bichromote solution and the two surfaces brought into close contact with each other and placed under pressure. A piece of oiled paper is laid on a sheet of thick glass, and the blocks laid face downwards upon it ; a number of sheets of thick plate glass are then piled on, and the whole left till the next day, when it will be found that the copper-plates are firmly attached to the wooden blocks and quite level. A proof is then taken, and, if necessary, the typographic images can be touched up with a roulette or graver to bring out lights or with a burnisher to deepen shadows.

The printing of these blocks seems to offer no great difficulties, provided the wood does not warp and the surface remains level. The image being broken up all over into a series of minute dots and spaces, offers a good support for the roller, and the images generally print very sharp and clear. The quality of the paper has, however, a very great influence on the result, and the best impressions are obtained on highly glazed paper. Eder's "*Jahrbuch*" for this year contains two illustrations printed from the same block by Meisenbach, one on the highly glazed paper, being of a rich full tone and almost as perfect in gradation of light and shade as a collotype print, while the other, printed on ordinary paper from the same block, is poor, flat and spotty, Enamelled paper, as used for collotype, also gives good impressions, but they are easily damaged. There does not seem to be the same necessity for overlaying as with ordinary deep-cut blocks, though it is probable that a skilful use of this auxiliary might aid in producing the finest results a block would be capable of giving.—*Jour. Phot. Soc. of India.*

THE COMBINED TONING AND FIXING BATH.

Herr E. Valenta has published in the June number of the *Photographische Correspondenz* the results of a very exhaustive research into the combined toning and fixing bath for the new chloride papers; this research having been made in the photo-chemical laboratory of the Vienna Institute.

As an introduction to his paper, Herr Valenta tabulates no less than twenty-six receipts or formulas. Most of these toning and fixing baths consist of water, "hypo," ammonium sulphocyanate, and chloride of gold ; but in two cases no gold is used, the bath consisting of "hypo" and lead nitrate only in one of these instances, and of "hypo," lead nitrate, and alum in the other. The total list of chemicals suggested includes "hypo," sulphocyanate of ammonium, sulphocyanate of potossium, acetate of sodium, tongstate of sodium, lead acetate, lead nitrate, citric acid, gold chloride, alum, chloride of sodium, chloride of ammonium, nitrate of silver, and carbonate of ammonium.

The least complex gold bath in the list of twenty-six examples is one quoted from the *British Journal of Photography*, 1890, p. 538, and consists of "hypo," gold chloride, silver nitrate, and water.

Water	20 ounces
"Hypo"	4 ounces
Silver nitrate	30 grains
Chloride gold solution (1 gr. to 1 dr.)	½ ounce

After remarking that chloride prints which have been fixed in a neutral and fresh fixing solutien show a tone which tends to brick red, but that this tendency is not observed to the same extent when the "hypo" is old and acid, our author states Blanquart-Evard's theory of sulphuration of the image as based on the decomposition of free hydrosulphurous (thiosulphuric) acid into sulphurous acid and free sulphur—

$$H_2S_2O_3 = H_2SO_3 + S.$$

This decomposition takes place slowly when the degree of acidity is slight, and after weeks of standing traces of hyposulphurous acid may remain in the solution ; but if a piece of bright sheet silver is immersed into the acid "hypo" solution the silver will soon be blackened from the formation of sulphide of silver, this experiment, at least, showing the tendency of the liquid to give up sulphur to metallic silver. Acid salts and alum also slowly liberate hyposulphurous acid ; and this gradually gives up sulphur to substances which, like silver, are ready to unite with it.

If we take a clear filtered solution of solidified or alumed "hypo," which obviously does not contain free sulphur, but merely the hyposulphurous acid ready to deposit sulphur, and in this solution we immerse a chloride emulsion print as taken from the printing frame, several changes will be noticed. The print first becomes yellow-red, and afterwards brownish, and in the end, gray-brown and unpleasant in tone. If, now, a number of prints are fixed in the same solution, those which come last will be toned to a uniform brown tint ; this being the result of the formation in the bath of the double hyposulphite of silver and sodium, a salt that expedites the process of sulphur toning.

For toning chloride emulsion prints by sulphur, and without gold, Herr Valenta recommends the following :

20 per cent. "hypo" solution	25 volumes
Saturated alum solution	4 volumes

This mixture quickly becomes turbid from the deposition of sulphur ; and it must now be filtered, when it is ready for use. The first few prints take about ten minutes to tone, and acquire a grayish-brown tint, but afterward an ordinary photographic brown is obtained.

The addition of citric acid to the hyposulphite solution also results in the liberation of hyposulphurous acid, which, as in the former case, gives its sulphur to the print.

Lead and Hyposulphite Bath without Gold.—Herr Valenta recommends the following as a combined toning and fixing bath without gold :

25 per cent. solution of "hypo"..... ...	1 volume
10 per cent. solution of lead nitrate.....	1 volume

The solution being filtered is ready for immediate use, and rapidly tones and fixes gelatino-chloride and collodio-chloride prints. The reaction in this case is supposed by Herr Valenta to be as follows : Hyposulphite of lead and sodium nitrate are first formed by double decomposition, and the former salt unites with sodium hyposulphite to form a double hyposulphite of lead and sodium. The lead hyposulphite thus held in solution decomposes into sulphide of lead and sulphuric acid in accordance with the reaction—

$$Pb\,S_2O_3 + H_2O = Pb\,S + H_2SO_4$$

The sulphuric acid thus liberated reacts on fresh hyposulphite of lead, hyposulphurous acid being liberated—

$$Pb\,S_2O_3 + H_2SO_4 = Pb\,SO_4 + H_2S_2O_3$$

The action of the free hyposulphurous acid has already been referred to, and it may be mentioned that the lead-hypo bath decomposes spontaneously in accordance with the above reactions, sulphide of lead and sulphate of lead being deposited; but this decomposition is retarded by the presence of potassium or ammonium sulphocyanate. For this reason a sulphocyanate becomes a desirable addition, especially as the more stable solution tones equally well.

A toning and fixing bath which not only sulphurizes the image, but also deposits gold, is the following :

Water.....	500 parts
"Hypo"	200 "
Ammonium sulphocyanate....	25 "
Lead nitrate	10 "
Alum.....	20 "

The "hypo" is first dissolved in the water, then the sulphocyanate is added, and next the alum, the lead nitrate being finally added after being dissolved in a little water. The whole is now warmed to 50 deg. C., allowed to cool, and filtered. For use, mix :

Above solution.....	100 volumes
Water.....	100 "
1 per cent. chloride of gold solution.....	7 to 8 "

As a supplement to the memoir on toning baths, to which we allude in the preceding article, Herr Valenta has studied the action of ozonized air on various moist prints, not with the view of considering this an absolute test of the permanency of the various prints, but as an experiment which may throw some light on the question.

Prints on collodio-chloride paper or on gelatino-chloride paper, and toned by sulphur in the acid hypo bath, have very little stability when exposed to moisture and ozonized air, as they become faint and yellow in about two hours.

The results with the lead and hypo bath are far more permanent under similar conditions, as they resist the action of the ozone twice as long, and even then they are not so much yellowed as those toned without lead.

Gold-toned prints, however, resist best of all, and prints toned in the combined hypo and gold bath only lose something of their warmth of tone when the ozone has acted for six hours.—*Photo. Work.*

BROMIDE ENLARGEMEMTS FOR THE WORLD'S FAIR.

THE EASTMAN KODAK COMPANY has just completed the work of enlarging nearly 700 pictures for the State Department of the government, which are to be exhibited at the Columbian Fair. The collection is one of the most unique and valuable that the government has ever made, and will form a prominent feature among the exhibits made by the United States at Chicago. Charles O. Thompson, the company's artist, has been engaged with an assistant for nearly two years in reproducing these pictures, and the results are highly satisfactory to the State Department and creditable to the artists.

"Many of the photographs are naturally indistinct," said Mr. Thompson, "as the colors in the original paintings have become faded by time. A large number of the pictures were enlarged on bromide paper and finished in crayon. We also reproduced many of the portraits in oil, and some of the more striking pictures in water-colors and pastels. The average size of the enlarged picture was forty by fifty inches, but many of them are much larger. After the pictures have been shown at the World's Fair, they will probably be placed in the art museum of the Smithsonian Institution at Washington."

Perhaps the most interesting part of the collection is the different portraits of Columbus, of which there are nearly sixty. These were copied from the original paintings in the art galleris of Venice, Milan, Florence, Rome, Madrid, Lisbon, and other cities, and represent the great navigator in youth, in middle life, and old age. Some of the pictures give the discoverer the look of a Dominican monk, with lean and austere countenance, a high forehead and scanty locks of hair. In others he appears as a jolly, round-faced sailor, apparently more fond of his grog than of discovering new continents.

"It is not generally known," said the artist, "that there is not an original portrait of Columbus in existence and that the first picture of him was painted nearly fifteen years after his death, and from descriptions furnished the artists by his former friends and associates. Perhaps the most famous of these is the Giovio portrait, as it is called. About the period when this was painted, several eminent artists in other countries also made portraits of Columbus. It is not probable that they received their information as to his personal appearance, from the same sources, and as their is a marked resemblance between several of these paintings it is evident that they are fairly correct. The Yonez and Rincon pictures of the court of Spain are the oldest in that country, and are claimed by that country to be authentic. Another famous fortrait is the one which hangs in the palace of the Ministry of Marine at Madrid."

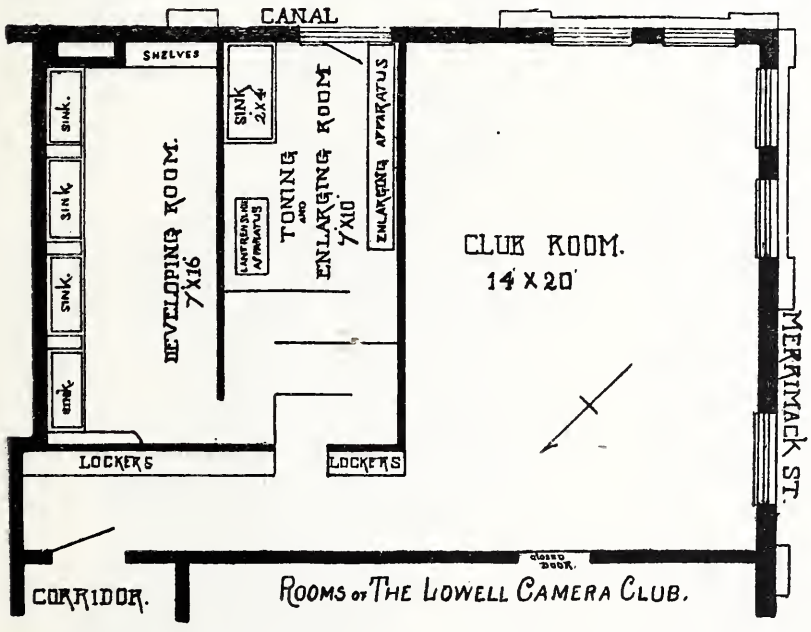
The photographs of these noted paintings represent Columbus to have been a man of medium height, with aquiline nose, high forehead and a face that was marked with much intelligence and individuality.

Photographic Societies.

THE LOWELL CAMERA CLUB.

THE new rooms of this growing club have been formally opened and are now being enjoyed by the members of the club. As the local paper asserts, the new quarters are all that the most enthusiastic in the art of photography could wish; in fact, it is doubtful if the equipments are equalled in excellence and completeness by those of any club in New England. In the first place the location is as centrally situated as it can well be, being at the junction of all the street car lines, and the rooms occupy, perhaps, the best portion of the building. They are on the upper floor, in the southern corner, and they command a splendid view. Both Merrimack and East Merrimack Streets can be seen from the windows, and the whole of the Post-office Square spreads out beneath like a panorama.

But it is the fittings of the rooms themselves that are specially deserving of notice. The dark or developing room is probably the most important feature of the photographer's studio, and that of the Camera Club has been designed and arranged with such care that it may be said to represent the most advanced and scientific ideas known to the profession to-day. In size it measures 7 x 16 feet and is 10 feet high, and the arrangements for excluding daylight are well nigh perfect. The entrance to it is through a passage which has several zig-zag windings, and when all artificial light is shut off the darkness is so intense that one would imagine he could feel it. There are four dark lanterns or developing lights, and to economize space they are set in the wall, the screen in front being so arranged as to throw the light at an angle of about 45 deg. The lanterns are both light and air-proof, the ventilation necessary for burning being got through the wall, and as the gas jet is lighted by electricity. The front has three screens so that the operator can get light of varying power by using one or more of them. There are shelves between the lanterns to be used as receptacles for pans, baths, etc., and there is a sink in front, running the whole width of the room, with water faucets at different points. The wash-box used for washing the plates after they are developed is placed at the right-hand side of the sink. One of the most marked features of the developing room is the splendid ventilation which has been secured.



Adjoining the dark-room is the enlarging or toning room, 7 feet by 10 in size. Here also is a dark lantern similar to those in the dark-room, and there is a gas stove for heating solutions for platinum printing. On the dark shutters in this room is to be placed a daylight enlarging camera, and on the partition near it will be a shutter on a movable easel. This apparatus will not only be useful for the ordinary work, but will be used for making lantern slides, which will be made a feature of in the future.

The third and last room is in front, overlookink Merrimack Street, and this is the club room proper, but it will also be used for printing. It is 14 feet by 20 in size and 16 feet high, and is fitted up with all the conveniences suggested by the character of the club. A large table in the centre is piled with papers and magazines chiefly devoted to the literature of photography, and a nice library case on one side holds a large collection of books.

Another feature is a large fixture divided into a number of lockers where members can keep private property, such as chemicals, slides, etc. The burnisher is one of the best things in the market at present, being a new model with many valuable features.

Taken altogether the furnishings and equipments are such as to reflect credit on all concerned, and their excellence gives the club an opportunity to do work second to none. The club was organized in 1883; it was reorganized in 1889 and it was incorporated in 1892. It has now forty members and some more are coming so that it is expected it will number about fifty in a short time. The present officers are: President, Paul Butler; Vice-President, W. P. Atwood; Secretary, G. A. Nelson; Treasurer, A. S. Guild.

Notes and News.

James & Pattee, photographers of Des Moines, Iowa, have dissolved partnership.

W. J. Topley, of Ottawa, Ontario, was recently partly burned out, but his loss was covered by insurance.

The Chautauqua School of Photography now numbers 30 members, and is growing all the time.

"The American Annual of Photography" for 1893 is rapidly progressing. It will be ready punctually on December 1st. A large English and foreign edition will be published in London simultaneously with the American edition.

The Fraternity of Ferrotypers will be pleased to learn that the Scovill & Adams Co., 423 Broome Street, New York, have (without any extra charge for the collodion) had a special NON-ACTINIC AMBER COLOR POURING AND DREG BOTTLE made for putting up their celebrated Phenix Ferrotype Collodion. All who make positives (tintypes or ferrotypes) will understand the vastly superior results they can obtain when the collodion is *preserved* in these non-actinic pouring bottles. The price is 50 cents for the Pouring and Dreg Bottle with the eight ounces of collodion contained therein.

C. T. RAYNOLDS & CO., DISSOLUTION.

Notice is hereby given that the partnership heretofore existing between the undersigned, carrying on business at Nos. 106 and 108 Fulton Street, in the City of New York, under the firm name of C. T. Raynolds & Co., is dissolved, the assets thereof having been purchased, and its existing liabilities assumed by the corporation known as F. W. Devoe & Company.

Dated New York, July 25, 1892.

THOMAS B. HIDDEN,
EDWARD L. MOLINEUX,
EDWARD H. RAYNOLDS.

We take pleasure in announcing to our friends and the trade generally that the business interests of C. T. Raynolds & Co. and F. W. Devoe & Co. have been consolidated, and the two houses incorporated under the name of "F. W. Devoe & C. T. Raynolds Co."

Our facilities will be largely increased by this union, and we can assure our friends that all orders will be promptly executed under the most favorable conditions, and they may rely upon receiving the *same brands* and qualities of goods as heretofore.

With thanks for past favors, and hoping for an increased share of your business in the future, we remain,

Respectfully,
EDWARD L. MOLINEUX,
EDWARD H. RAYNOLDS,
of C. T. RAYNOLDS & CO.

New York, August 1, 1892.

Queries and Answers.

318 FREDERIC L. N.—Matt-surface silver prints made according to formula 1. Lesson on plain paper printing, "The Photographic Instructor," third edition, are of a feeble, monotonous grayish color, and without brilliancy, no matter how intense the negative printed from. What remedy may you suggest?

318 *Answer.*—The paper has been salted too strongly, or the ammonia nitrate of silver solution is not acid enough. Immerse the crude paper for one minute in a solution of chloride of ammonium, 300 grains to the gallon of water, and add to the silver solution as much glacial acetic acid, as is necessary to dissolve the precipitate formed when the plain silver set aside at first is admixed.

319 INDIANA wants a chloride of silver gelatine formula for the making of aristo paper.

319 *Answer.*—As we do not suppose you want a description of how to make emulsion, in which case we refer to the handbooks on the subject we give you merely a good formula, that of Mr. Walter Woodbury, adopted by some of our American manufacturers, viz.:

Water	8	ounces
Nitrate of silver	¼	drachm
Rochelle salt	20	grains
Chloride ammonium	10	grains
Alum	50	grains
Citric acid	60	grains
Gelatine	1	ounce

The emulsion is not washed and applied to paper furnished with a substratum of baryta gelatine.

320 FORT WORTH, TEX., wants a formula for toning matt-surface prints with palladium chloride.

320 *Answer.*—Wash the print first in pure water and afterwards in a 1 per cent. solution of sodium carbonate; lay the print face down upon a glass plate and brush over its back a 1 per cent. solution of palladium chloride slightly acidified with hydrochloric acid, wash and fix in hypo with a little ammonium carbonate, The tones are of a fine sepia brown.

321 FRIDA N. wants to know how to make prints of a bright-red color.

321 *Answer.*—A formula for printing in red color, that by von Monckhoven, may be found in almost every handbook of photography: Print upon paper prepared with a 2 per cent. solution of uranium nitrate, till the image is fairly well out and develop with a 10 per cent. solution of ferrocyanide of potassium. We have had very good success in red printing with paper sensitized with a solution of ammonia citrate of iron, strength 70 hydrometer degrees, and developing the image with nitrate of silver acidified with citrate acid 8 grains of silver to the ounce of water and 1½ grains citric acid.

322 MRS. MCN. has spilled nitrate of silver over a new light-colored carpet and in her distress asks how these terrible stains may be removed.

322 *Answer.*—We advise to touch up the silver stains with a saturated solution of bi-chloride of mercury, but advise her also not to tone her beautiful genre pictures in the same room. A drop of hypo spilled upon the silver stains will redevelop them slowly.

323 MARTIN PLATT.—How are paper photographs made transparent, and how are they attached to plane or curved glasses preparatory for coloring?

323 *Answer.*—If on albumen paper, soak the print over night in a mixture of 8 ounces castor oil and 1 ounce Canada Balsam. Plain paper requires a much shorter time. When the print is thoroughly soaked, take it from the oil, drain well and lay it on the glass, face downward, and squeegee till all air is driven out, and the print adheres. If a curved glass is used prepare a squeegee with edge parallel with the curvature of the glass.

It will take several hours before the print is dry enough to apply color to it.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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Weekly (illustrated) for one year.....$5 00
" " " six months..... 2 50
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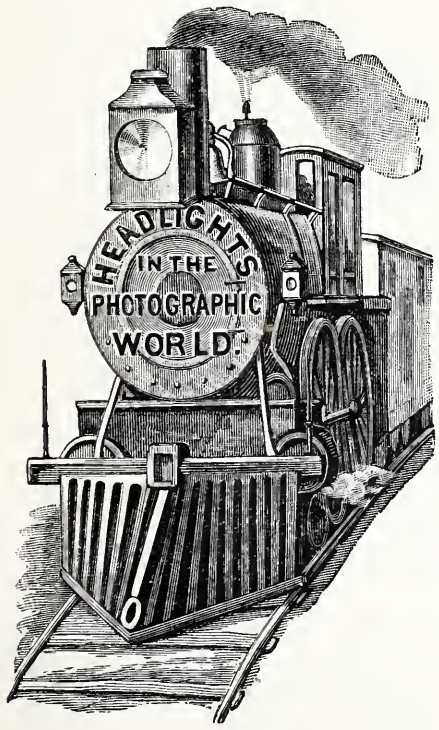
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Subscriptions to THE PHOTOGRAPHIC TIMES received by all dealers in photographic materials in this and foreign countries, also by the American News Co. and all its branches.

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Size of advertising pages, 6¼x9¼ inches; outside size, 8½x11¼ inches.
One page, each insertion.....$25 00
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Quarter page, per insertion..... 8 00
Eighth " " " 5 00
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Discount for term contracts.

Copy for advertisements must be received at office one week in advance of the day of publication. Advertisers receive a copy of the journal free, to certify the correctness of the insertion.
All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.



THE AMERICAN ANNUAL OF PHOTOGRAPHY AND PHOTOGRAPHIC TIMES ALMANAC.

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In Paper Covers, - - - per copy, $0 50
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First.—Because it is acknowledged to be the leading organ of photography in America.

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Fourth.—Because it is the only photographic weekly journal in the world which is illustrated every issue with a high-grade photographic picture.

Fifth.—Because its high-class illustrations and reading matter places it upon the reading table of all the leading libraries in the country, and the photographic organizations.

Sixth.—Because it is the best edited and best printed photographic magazine published anywhere in the world.

Seventh.—Because you reach a class of buyers in it, not obtained through any other medium.

Eighth.—Because it is not read and then thrown away, but is preserved and bound, on account of its beautiful illustrations and original information.

Ninth.—Because it contains every week more original information prepared especially for its columns than any other photographic magazine.

Tenth.—Because its circulation is not local or limited, as it extends throughout the entire United States, and goes to both professionals and amateurs.

Eleventh.—Because it circulates not only in this country, but also in Europe and on the Continent.

Twelfth.—Because its pages are double the ordinary quarto size.

Thirteenth.—Because its rates are lower than any photographic publication, considering the size of page and the extent of circulation.

Fourteenth.—Because your advertisement will receive the best of treatment on the part of the compositor, and will be advantageously placed in its pages.

Fifteenth.—Because all its advertisers are endorsed by the publishers as being worthy of patronage.

Sixteenth.—Because no advertisement in any way objectionable is admitted to its pages.

Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

Business Notices.

WANTED.—August 28, 1891, issue of THE PHOTOGRAPHIC TIMES by Dr. A. C. Mercer, 324 Montgomery Street, Syracuse, N. Y. Will pay 25 cents for it.

FOR SALE.—4 x 5 Gennelli Camera, for making four minette pictures on a plate. Good condition. Price $12. Address G. B., care THE PHOTOGRAPHIC TIMES.

WHO HAS BEST BARGAIN in second-hand 8 x 10 Lens for me? Portrait or View. First-class make only. Write early. Low prices.
FRANK E. HEGE, Salem, N. C.

FOR SALE.—One of the oldest and best equipped galleries in the city of Denver, Col.; centrally located, and good prices. Newly refitted up to 18 x 22. Good reasons for selling. Correspondence solicited. Address "PHOTOGRAPHER," care PHOTOGRAPHIC TIMES.

FOR SALE.—A new 4¼ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
Care THE PHOTOGRAPHIC TIMES Office.

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W. P. BUCHANAN, Importer, Philadelphia.

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FOR THE NEWEST AND BEST GOODS of the American Optical Co., Anthony & Co., Eastman Kodak Co., Rochester Optical Co., Blair Camera Co., or Gennert & Co., send to
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THE UNDERSIGNED has a few 6x5 Dallmeyer Rapid Rectilinear Lenses which he will sell for 20 per cent. from list prices. These lenses are a late importation and are all warranted. Address "TOURIST,"
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THE FINEST Platinotype Solar Enlargements and contact prints, in black and sepia, are made by
THE PLATINOTYPE CO.,
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Send for price lists.

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PHOTOGRAPHERS who have not the time or facilities for doing outside or interior work should never loose an order, as I am prepared to make their negatives for them of every description or any size up to 20 x 24. Printing and developing for amateurs or the trade as heretofore. I do nothing but the best work. Come and see me.
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A BARGAIN.—No. 1 Kodak, complete and unbroken seal; price $15; cost $25. Address
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LANGILL. 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

A BARGAIN.—$425 cash will buy my fully equipped gallery; no opposition; good reputation, and portable branch. Buildings and equipments valued at $750; cause, poor health. Address
PHOTOGRAPHER, Tidioute, Pa.

FOR RENT.—Fine and well arranged photographic rooms, newly renovated, on Main Ave.; cheap rent; gas, water and fuel. Apply to WM. D. MORRIS,
1165 Hampton St., Scranton, Pa.

WANTED.—Practical View Photographer; an ambitious young man of good address who wants to travel. You do? We want an untiring, accurate, self-dependent worker, who can always do something more useful than lay around and wait. He should be somewhat of a salesman, an artist, an enthusiast with the camera. He should be willing to prove his fitness and to commence at a moderate salary, all travelling expenses being paid by the firm. We do not want applications without business references, or of men who answer only the one requirement of wanting a job. We desire to find the right man and to treat him right. Write C. H. R., Post Office, Brooklyn, N. Y.

NOW READY.

MORAN'S BARGAIN LIST No. 39.

It will pay you to seed for it before ordering any goods in the photo line.
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The cards for these Albums may be quickly and securely attached to the guards after the prints are mounted and burnished.

Price-list, including 25 sheets of Collins' best quality White Cards:

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FOR SALE.—Ground floor photo gallery; every thing for work; well located; good reasons for selling. For information, address,
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FOR SALE.—An Albion Outfit, 8½ x 6½, with Roll-Holder and Lenses; a 5 x 7 Outfit; a Beck Hand Camera, Stereo-Camera, and several Lenses. Send for list to
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The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47	25
Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574	50
pp. 113, paper	10

ODD NUMBERS AND VOLUMES OF PHOTOGRAPHIC JOURNALS.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

THE PHOTOGRAPHIC TIMES, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English), Vols. I. and II. (except No. 18), 1890, 1891.

A few *very* odd numbers of Photographic Notes, Daguerreian Journal, Photographic and Fine Art Journal, Magic Lantern Journal, Photographic Herald, etc.

Employment Offered and Wanted.

SITUATIONS OFFERED.

A first-class printer and toner wanted by McAlpin & Lamb, Portland, Oregon. Must be first-class; salary from $15 to $20, depending upon ability. Address with references.

$20 to $25 paid each week for reliable, industrious man to operate and retouch; no Sunday work. None but first-class wanted. Send samples and photo of self. D. H. Swartz, Houston St., Fort Worth, Texas.

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Partner wanted, with or without capital; will pay salary if preferred; must be A No. 1 operator with a successful experience in large work, and a fine retoucher. Address with samples and terms to A. E. Hotchkiss, Norwich, N. Y.

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Operator and general workman would like a situation at once; New England States preferred. Address R.E.S., Box 10001, Worcester, Mass.

A position in photo-engraving establishment by a young man skilled in the making of "black and white" negatives, Address U. F., care THE PHOTOGRAPHIC TIMES.

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Prices of Rapid Rectilinear Lenses, Series B :

3¼x4¼	$18 00	5 x8	$22 50
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COLD DEVELOPMENT!

The New Process is now ready.

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Are made of the same glass and on the same curves as their other lenses, but are in less expensive mounts ; the quality therefore is perfect, the price greatly reduced. Send for list.

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A *good* article in this line is always hard to find. The *package* paper is variable and not to be relied upon. The motive of this little "Ad." is to tell you of our *special* Blue Paper. It is made fresh every day, on imported paper ; is 50 per cent. cheaper than other papers, and withal is the best. Per yard (27 inches wide), cut to any size, 25c. Send 5c. for sample. THE OBRIG CAMERA CO.,
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"Rapid Rectilinear," "Mid-Angle" and "Wide Angle" have all the wonderful properties of the well-known Series A, at prices as low as those of common lenses.

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They can be loaded in the *daylight*, and we give full and careful personal instructions gratis. We develop, print and mount in albums at Eastman's prices. Only *first-class* work turned out. THE OBRIG CAMERA CO.
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THE DEVELOPING AGENT OF THE FUTURE.

With para-amidophenol there is no staining of the film, as with eikonogen and hydrochinon when development is prolonged, absolute transparency and opacity is secured, and the time of exposure is reduced about 30 per cent. without injury to half-tones and middle-tints.

FORMULA FOR DEVELOPER.

Para-amidophenol (pure)	100 grains
Sodium sulphite (crystals)	3 ounces
Potassium carbonate	1½ ounces
Water	32 ounces

FOR USE.—Take 1 ounce of the above solution and from 2 to 4 ounces of water, according to the length of exposure.

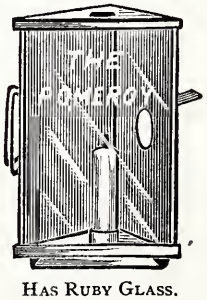
The stronger the solution the greater the intensity of the resulting negative ; the more diluted the solution the greater softness and more detail.

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IN ONE-HALF OUNCE BOTTLES,

Reduced to 75 cents per bottle.

THE SCOVILL & ADAMS CO.



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Size, 6½ x 4¼ Inches.

We would respectfully call your attention to

"THE POMEROY Dark Room Lamp,"

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1st.—Because it has perfect ventilation.

2d.—Because being triangular in form it can be folded without complication, and occupies a space not greater than Webster's Pocket Dictionary, 6½ x 4¼ inches.

3d.—Because it has a socket to take candles, which may be procured in any part of the country; the annoyance of loading one's self with a supply is avoided.

4th.—Because there are no small chimneys to be broken or cleaned, nor adjusting of wicks.

5th.—Because it stands more firmly than all others, and is of the proper size, and gives proper light.

6th.—Because it has folding handles and may be carried without burning one's fingers.

7th.—Because the flame is so readily controlled, having light-tight slide at side.

8th.—Because it comes all complete in a pasteboard box, less candle, for 50 cents, and can be mailed to any part of the United States for 10 cents postage extra.

FOR SALE BY

THE SCOVILL & ADAMS COMPANY.

WHO WON?

The names of the successful contestants will be published in the August number of The Photo-American. There are a lot of other good things in this issue which will profit you to know. Look out for Premiums we are offering.

Send 10 cents in stamps for copy.

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THE CHAUTAUQUA School of Photography.

The term of the local class 1891-92 closes on Saturday, April 30th.

The practising class will open on the Assembly Grounds on or before July 1st, and will remain in session till the first week in September.

Subjects of Instruction.—The modern gelatine processes in all their bearings, mainly orthochromatic methods by timed and instantaneous exposures.

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Especial attention will be paid to the making of lantern slides.

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For one course of ten lessons	$5 00
For one-half course of five lessons	3 00
Special lessons	1 00

Independent of photographic materials and books.

Advanced students will please to bring with them Camera, Lens, Plate-holders and Tripods. Utensils are furnished by the school.

Beginners may work with the apparatus of the school, without extra charge.

The Corresponding Class may be joined at any time.

For particulars apply to

PROF. CHAS. EHRMANN,
423 Broome St., New York.

And after June 24th,
CHAUTAUQUA ASSEMBLY GROUNDS, N. Y.

Felt Backgrounds.

The Scovill & Adams' Plain Felt Background, recently introduced, is a great boon to all Photographers, both Professional and Amateur.

It is made of strong, thick and even stock, and is of an agreeable neutral drab color. It is especially suitable for vignetting. The texture of the cloth absorbs instead of reflecting light, and thus produces soft effects, and agreeable depth in print. The liability of defacement by water stains is obviated.

The prices of these grounds are as follows:

4 x 6 feet	$2.50
5 x 6 "	2.75
6 x 6 "	3.00
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These sizes may be sent by mail on receipt of 35¢. extra.

For Sale by all Dealers in Photographic Goods,
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THE NEW BLUE PRINT PAPER.

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SEND FOR A PRICE LIST.

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PHOTOGRAPHIC DIRECTORY.

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PHOTOGRAPHIC SUPPLIES,

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Established in 1850. SAN FRANCISCO, CAL.

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The only EXCLUSIVE Photo Stock House between the Missouri River and the Pacific Coast.

"HOW TO MAKE PHOTOGRAPHS."

Containing a descriptive Price List of all goods pertaining to Photography, sent free to any address on application to

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Mail us 75 CENTS and we will send you by return post our No. 2 FLASH LAMP with magnesium, bulb and tubing all ready for use.

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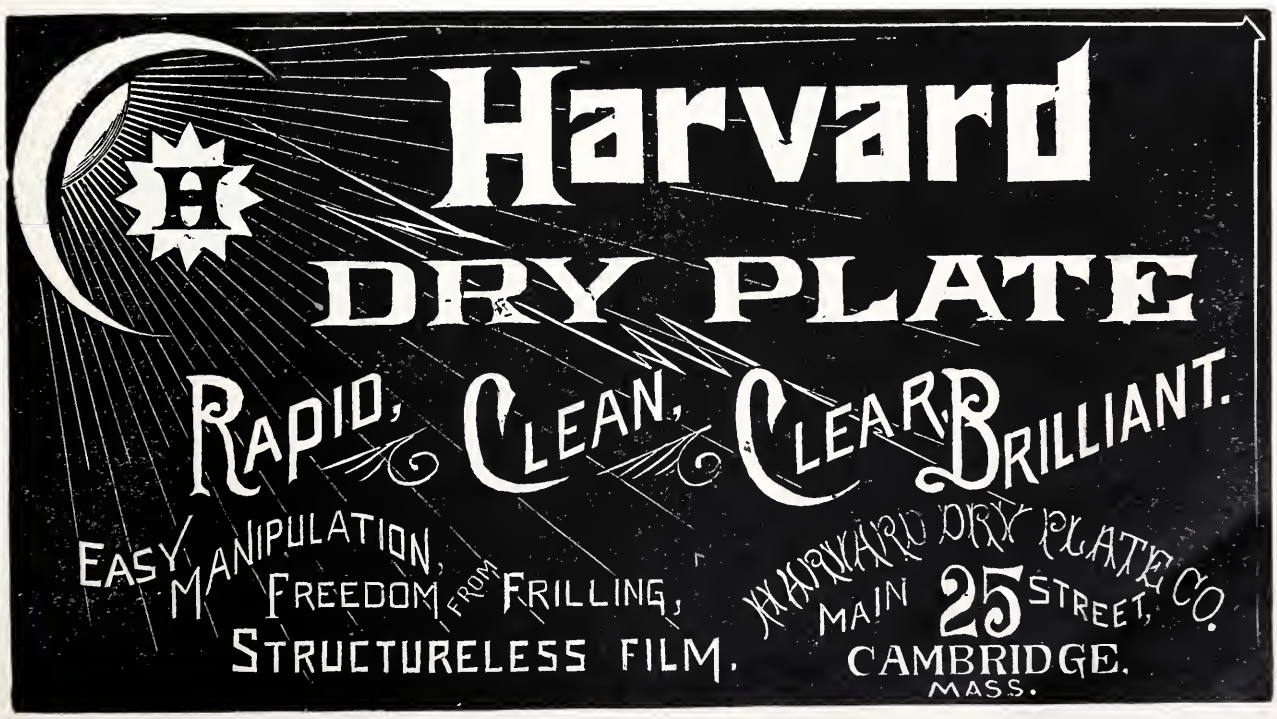
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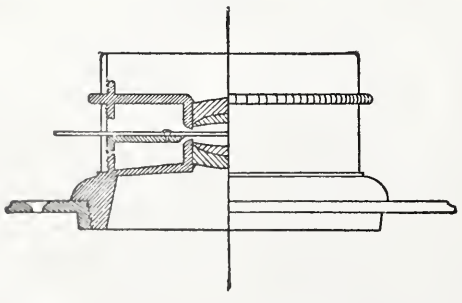
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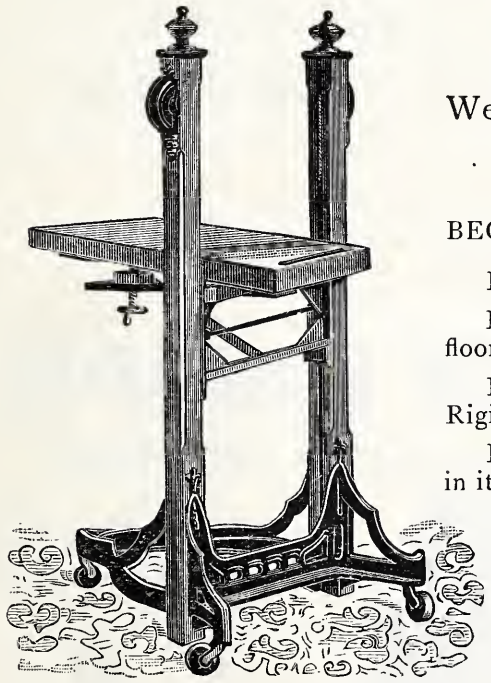
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2	1 "	4 x 5 "	3½ "	" 25.00	
3	1 "	4½x 6½ "	4½ "	" 25.00	These 5 sizes will
4	1 "	5 x 8 "	5½ "	" 25.00	fit into 1 flange.
5	1 "	6½x 8½ "	6½ "	" 25.00	
6	1 "	8 x10 "	8 "	" 30.00	
7	1½ "	11x14 "	10½ "	" 40.00	These 2 sizes will
8	1½ "	14x17 "	14 "	" 50.00	fit into 1 flange.
9	1½ "	17x20 "	17 "	" 60.00	These 3 sizes will
10	1½ "	20x24 "	22 "	" 80.00	fit into 1 flange.
11	1½ "	25x30 "	28 "	" 100.00	

☞ Nos. 1 to 6 are all made in matched pairs for stereoscopic work. The shorter-focused lenses are especially adapted for street and other views in confined situations. For general purposes, a pair of No. 5 lenses will be found most useful.

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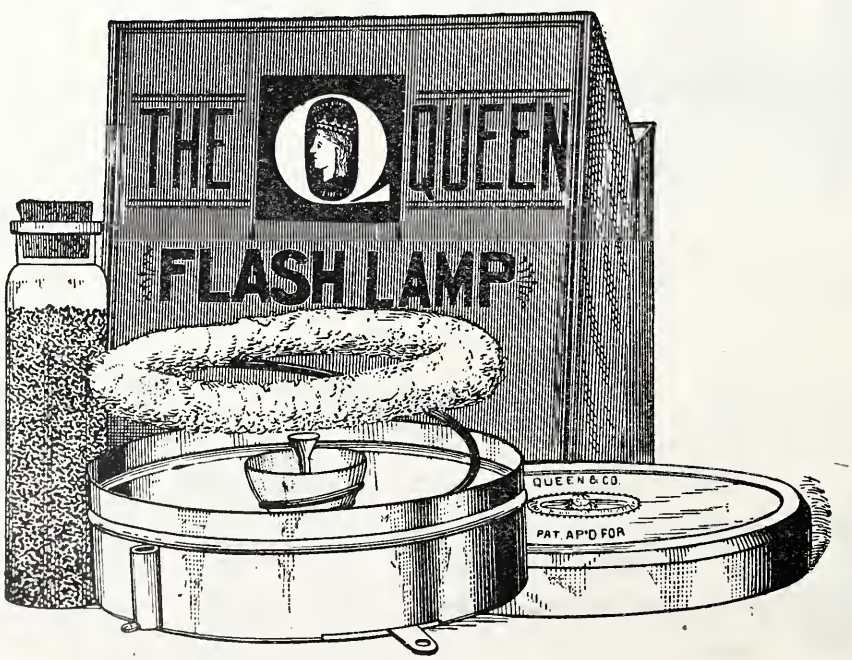
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Mailed to any address upon receipt of $1.50.



$1.50

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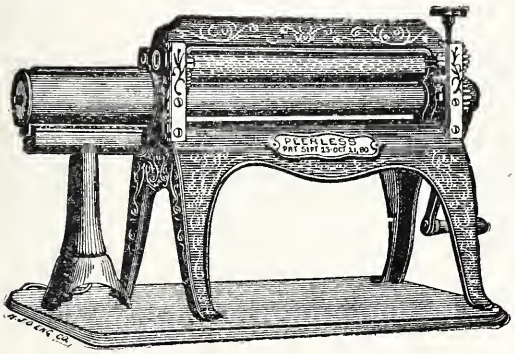
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Size of room effectively lit when good lenses are used, about 25 x 30 ft.
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Time consumed in getting the lamp ready for discharge, 1½ minutes.

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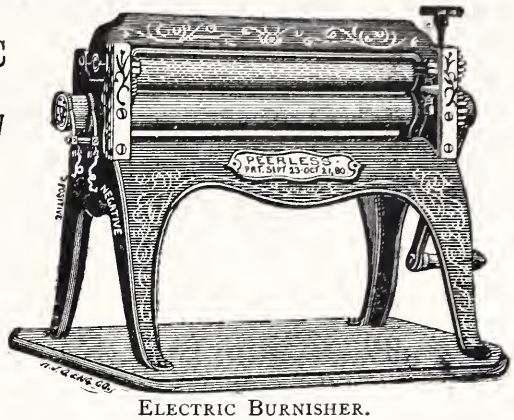
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ARISTOTYPE PAPER.

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It does **not** stick, nor does the surface of the print rub off.

THE PERFECTED BRADFISCH TONING AND FIXING SOLUTION is recommended for use with Aristotype Paper.

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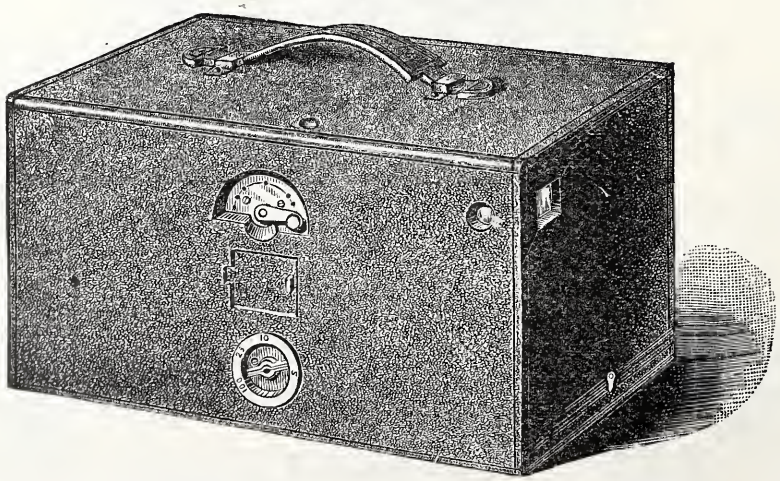
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THE SCOVILL & ADAMS COMPANY, Manufacturers.

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One part of the concentrated solution, diluted according to temperature, with 30 to 50 parts of water, gives FINE RESULTS with my plates, CLEAR, CLEAN, BRILLIANT! and I take pleasure in recommending it to the fraternity. For making up a large quantity of developer, it requires but little of the concentrated solution, and ITS USE IS SIMPLICITY ITSELF.

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Send **30** cents for a sample dozen.
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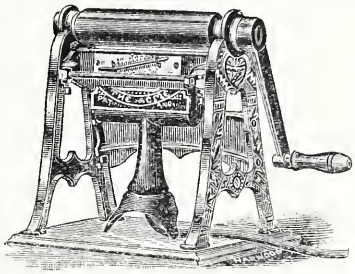
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Saves seventy-five per cent. of gas, oil or alcohol.
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One-hand wheel adjustment.
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LUXOTYPE OPALS.

Ready Sensitized, Printing Out, Toning and Fixing, same as Albumen Prints.

LUXOTYPE TRANSPARENCY AND LANTERN PLATES,

No Development, Printing Out, Toning and Fixing as usual.

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WITHOUT large advertising or expensive demonstrating is rapidly taking the lead.

MERIT alone can do this, and users of Bromide Paper, who are ambitious to make the highest standard of work, are asked to give it a trial.

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Its delicacy of half-tones renders it peculiarly suitable for producing the warm or Sepia tones. FORMULA SENT FREE. PRINTS MADE FOR THE TRADE.

The Hoover Patent Printing Machine can now be had. **Price, $100.**

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We also make a size four times larger than the stamp pictures. Send for samples and prices, which will be furnished on application.

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After many years of scientific research a preparation for the salting of plain photographic paper has been discovered, by which method the finest printing results are obtainable. The advantages are apparent to all.

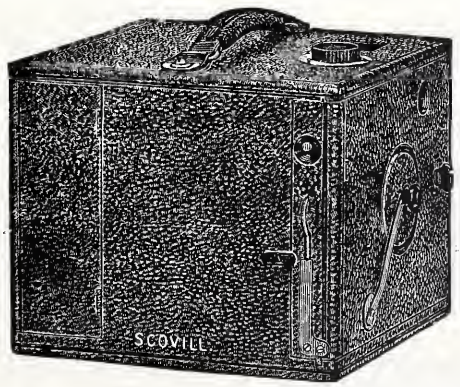
I.—Constant use will not discolor the silver bath.
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IV.—The *"New Matt-Surface"* paper when sensitized will keep fresh for a long time if properly stored.
V.—The price has not been advanced.

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THE SCOVILL & ADAMS COMPANY,

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MANUFACTURED BY THE AMERICAN OPTICAL CO.

Timed and Instantaneous Photographs. This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size, It is

The only Detective Camera made for plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

The Recessed Finder shows *the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

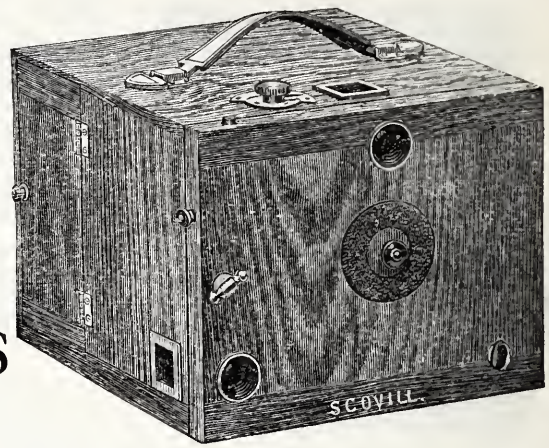
The Focusing Scale is beside the Finder, where it may be readily seen and adjusted.

Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders	$25 00
5 x 7 Waterbury Detective Camera, with 2 Double Holders	40 00

FOR SALE BY ALL DEALERS.

IMPROVED KNACK KNACK DETECTIVE CAMERAS



To meet the demand for a cheap Detective Camera within the reach of the youth, and of those who want to make but a moderate investment in photographic appliances, we have introduced the Knack Camera, which is certainly lighter and more compact than any other cheap detective camera in the market, and what is still more important, has a much more expensive and more perfect lens.

This Double Combination Instantaneous Lens, with Interchangeable Stops, when bought separately costs as much as the whole camera.

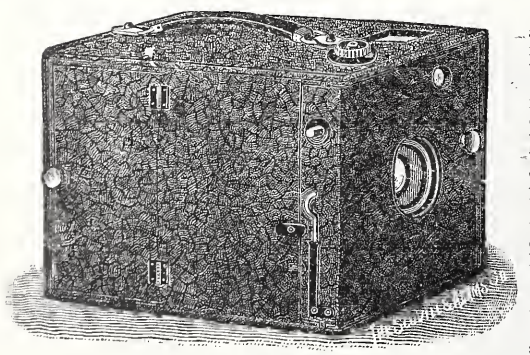
The whole front of this camera is hinged, which is a great convenience. The camera has a Recessed Finder, an Instantaneous and Time Shutter with Speed Regulator, Cap for timed exposures, and one Double Dry Plate Holder.

	Price.
No. 1 4x5 Antique Oak, Knack Camera,	**$15.00**
No. 2, " Leather Covered, " "	**17.50**

MANUFACTURED BY THE SCOVILL & ADAMS CO.

FOR SALE BY PHOTOGRAPHIC MERCHANTS.

THE TRIAD CAMERAS.



When a discovery in photography is announced, it is claimed that the new article will displace everything then in use. These claims are seldom justified. There is generally found a place for the new article, if it has any value, and for the old as well.

For commercial purposes, for instance, such as the reproduction of photographs for illustration, it has been demonstrated that collodion "wet" plates are better than dry plates. For the use of the amateur, on the other hand, dry plates are much better than wet plates. Though many new supports have been tried, the sale of glass dry plates is larger now than ever before. Where only a few pictures are to be made on one day's outing it is likely that the experienced photographer will always use dry plates or cut films.

If he is going away for a summer vacation, or for a trip abroad, and expecting to to make a large number of pictures, he will procure a roll-holder loaded with continuous films. This will save him the bother of developing while he is away from home, and of changing plates; but he cannot well know what results he has secured until he has exposed the entire roll and has had it developed

For those who want to use celluloid instead of glass plates, and are not willing to trust to good luck in the exposure of the complete roll of film, we offer with the "TRIAD" camera a *double* film holder which is very light. If the amateur carries six of these holders (loaded with twelve films) he is well supplied for one day · that is, if he is prudent and aims to get only really good pictures. At night, either in a photographic studio or in his own hotel room, the exposed films may be put away into safe receptacles, and another lot of unexposed films substituted for them.

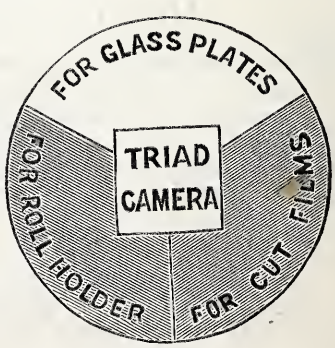
The Triad Camera is fitted with the latest improved Roll-Holder for continuous films, two double holders for glass plates, or two double film holders, if the latter are preferred.

This Camera is fitted with an Instantaneous Rapid Group Lens with easily interchangeable diaphragms —the most satisfactory detective camera lens ever made. It has a finder so constructed that the image is the same as that on the ground glass, though of course it is proportionately diminished in size. Usually the finder in a Detective Camera shows simply the image on the plate, but not its relative size and proportions. The Instantaneous Shutter in this camera is provided with a speed adjuster which works from the outside, and the focusing device and scale are conveniently near the finder. This is very important when one is trying to photograph rapidly moving objects.

For timed exposures use a tripod (easily adjusted to the camera by the plate underneath), open the door at the back, so that the image on the ground glass can be easily seen, set the shutter with the opening opposite the lens, and bring into use the felt cap which fits the opening in front of the camera. By complying with these simple requirements you have a complete camera for timed exposures.

	Price complete.	Price without Roll-Holder.
4 x 5 Triad Camera, with Roll-Holder, two Double Dry Plate Holders, or two Cut Film Holders	$35 00	$25 00
Extra 4 x 5 Triad Double Dry Plate Holders		1 25

Holders for Cut Films, same prices as above.



TRADE MARK.

For sale by all dealers in Photographic Materials and the Manufacturers,

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AMATEURS, ATTENTION!



Please remember that in speed and every desirable optical quality no lenses yet constructed can rival

Voigtländer's Euryscope Lenses,

which are made in SEVEN different styles.

BENJ. FRENCH & CO.,

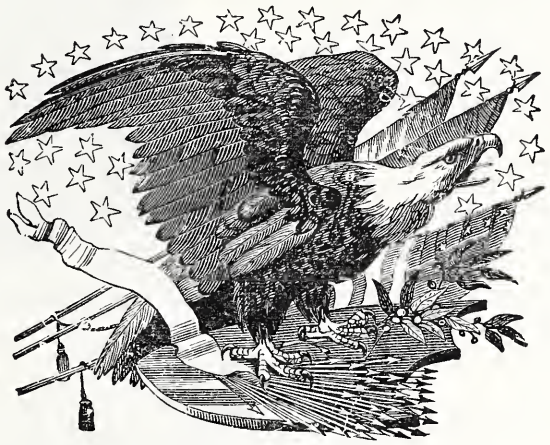
319 Washington St. BOSTON, MASS.

Revised price-List sent on application.

Correspondence solicited.

Wuestner's New Orthochromatic Plates

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The results obtained by some of our professional and amateur friends are simply wonderful.

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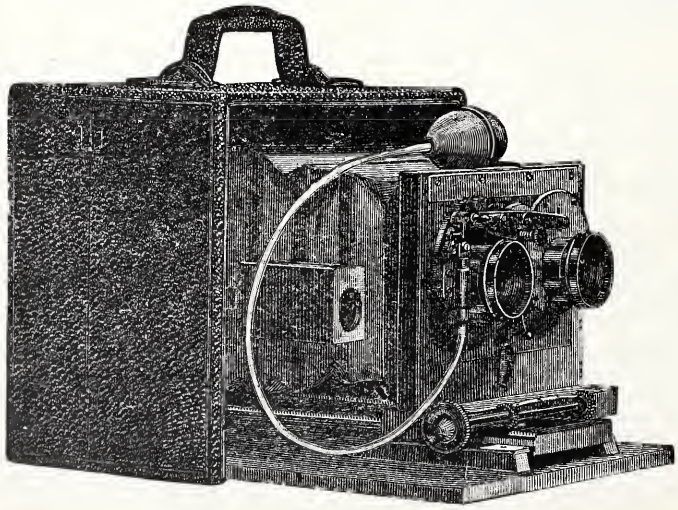
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide ; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

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This camera can also be made with vertical sliding and swing front. By means of the former the proportion of sky and foreground may be adjusted ; the latter permits the taking of subjects which may be either above or below the level of the camera and still preserve the lines vertical.

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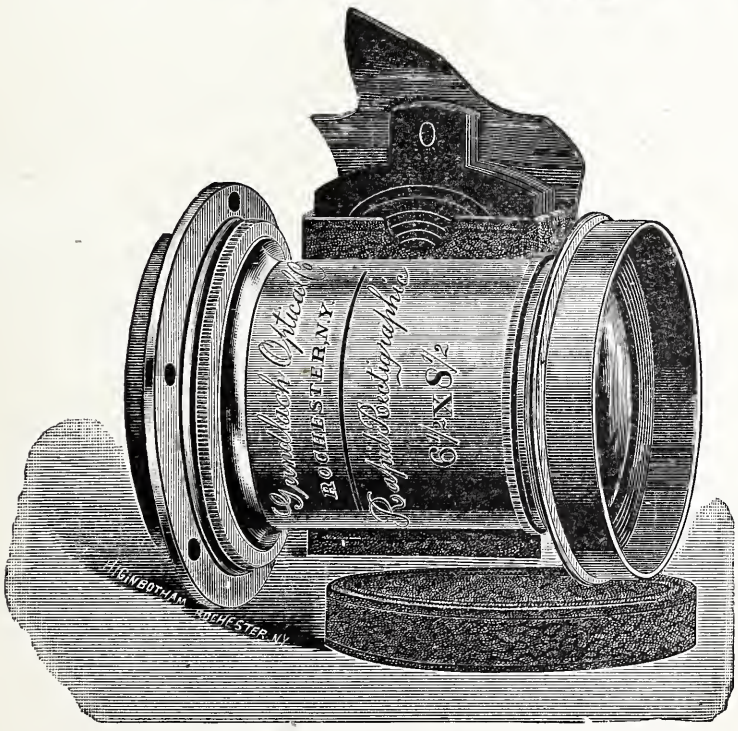
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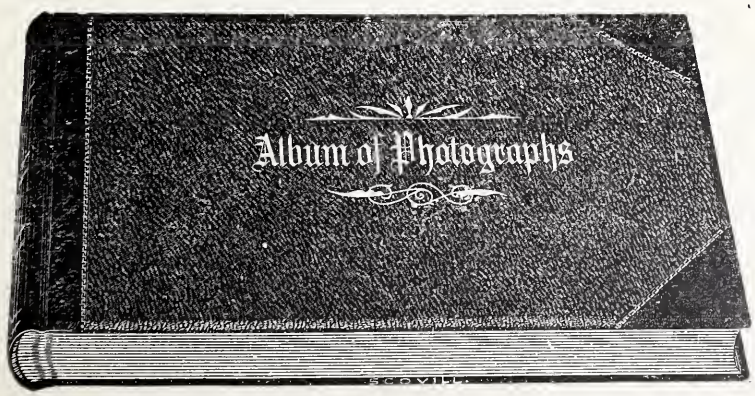
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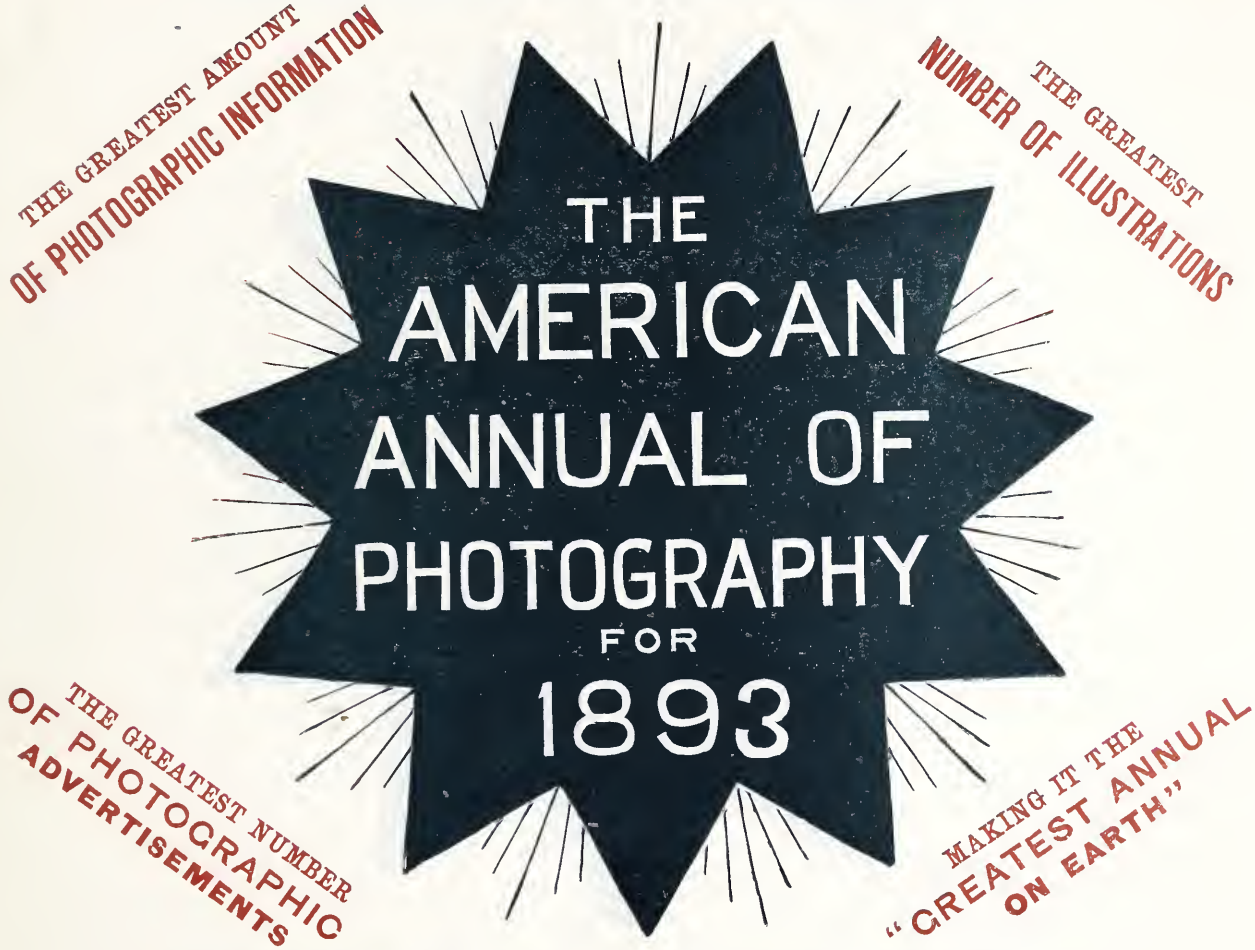
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C. H. Miller, Photo. F. Gutekunst.

MARBLES.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. AUGUST 26, 1892. No. 571.

PLAYING MARBLES.

THE attractive picture which embelishes this number of THE PHOTOGRAPHIC TIMES would perhaps be more appropriate if presented during the spring season, as that is the time for marbles. But it will be appreciated by those who have witnessed the game, at any time of the year, as it is a thoroughly characteristic of this distinctive game of the American boy.

Mr. Miller, who made this picture, as well as others which have embelished our magazine, writes that the boys are orphans, "and I had quite a time with the mistress who had charge of the home in which they live, to let me take a picture of them. She wanted them dressed in their Sunday clothes, and it was only after I told her several big yarns that I was given permission to take them. I intended to make another picture of the same boys in the afternoon, engaged in a different game, but when I arrived with my camera, I found the madam had dressed them up in white shirts, stiff hats, etc., and was ready for me. On pretense that I had left something indispensable at home, I gave up the attempt, and returned.

The reproduction is a phototype by Mr. Gutekunst.

ON THE RELATIVE QUANTITY OF PARAMIDOPHENOL, HYDROQUINONE AND EIKONOGEN.

MESSRS. A. & L. LUMIÉRE have published in the *Moniteur Photographique* a comparative study of hydroquinone, eikonogen and paramidophenol from which it appears that by exposing to the atmospheric influence an aqueous solution of each of these compounds, the paramidophenol first oxidizes, then eikonogen and last hydroquinone. The paramidophenol deposits a black substance which turns violet with ammonia and red with nitric acid. The eikonogen solution becomes colored brown and turns green with ammonia and red with nitric acid. The product of the oxidation of hydroquinone is reddish and becomes yellow with ammonia and the solution is discolored by nitric acid.

The oxidized products of hydroquinone and eikonogen dye gelatine yellow, while this substance is not stained by the oxidized paramidophenol. At least, Messrs. Lumiére state that twenty-five plates can be developed in the same solution without any difference of color in the negatives being discernible, whereas with the two other developers the film becomes tinged yellow after a few plates have been developed.

Each of the three compounds reduces the soluble salts of silver, but have no action on the haloid salts except in presence of an alkali. The addition to paramidophenol of potassium bromide or of sodium thiosulphate (hyposulphite) produces effects similar to those taking place with the other developers.

By following the method of Reeb to ascertain the weight of a reducing agent to reduce one gramme of silver nitrate, Messrs. Lumiére have found the following quantities :

Hydroquinol	.07
Paramidophenol	.14
Eikonogen	.30

In practice these differences have not a great importance as the developer is always employed in a greater quantity as regards the silver salt. Paramidophenol has, however, two advantages : it oxidizes more easily and, in consequence, acts with a greater energy and develops more rapidly. The products of its oxidation do not stain the gelatine film. The best proportion for its use is :

Paramidophenol	8
Sodium sulphide	100
Potassium carbonate	40
Water	500

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EDITORIAL NOTES.

HALATION may be prevented by coating the back of the plate with a paste consisting of dextrine and a little molasses dissolved in water saturated with picric acid. The backing is removed before developing.

MR. L. VIDAL states that orthochromatic plates rendered sensitive to yellow and red can be made less sensitive to the blue and violet by bathing them in a saturated solution of picric acid exactly neutralized by ammonia. Hence these plates would be more sensitive to the less refrangible rays and less sensitive to the more refrangible. The experiment is worth trying, as it dispenses with a yellow screen.

PHOTOGRAPHERS' DAY AT CHAUTAUQUA.

PHOTOGRAPHERS' day was celebrated at Chautauqua, as announced, Thursday, August 18th, and was probably, all things considered, the most successful photographic day which has ever been held at the Chautauqua Assembly Grounds.

The audience at all the meetings was large and enthusiastic. There were more papers read and addresses delivered than ever before, and the general interest manifested in photography was greater than on any photographic day in previous years.

All this goes to show the continual growth of interest in photographic matters in general, and in the Chautauqua School of Photography in particular.

THE OPENING ADDRESS.

This was delivered by Vice-Chancellor, George E. Vincent, who presented the diplomas to the successful graduates at its close.

Mr. Vincent addressed the meeting as follows:

LADIES AND GENTLEMEN: I have been asked by your good friend and mine, Dr. Ehrmann, to say a few words on the occasion of your closing exercises. It is not inappropriate that we should meet in what is comparatively a dark room. I can promise you, however, that in spite of the dim light, I shall make a very short exposure of my inability to address you appropriately. Let me pass over all the customary jests and play upon words into which one falls so naturally when he speaks upon this theme. I need not make these puns; you have made them all yourselves. Nor need I emphasize the fact that your avocation brings you into closest relations with nature. I need not tell you that by reason of your studies your sight into the beauties all about you is keener, and your pleasure in them more genuine. It would be trite to say that you have received benefit from your work in the open air, and that you live a broader and better life because of your studies in this school. I will leave beautiful imagery and eloquent periods to those who are more skilful than I. I should, however, like to lay stress upon two things:

First, the educational value of your studies. It is impossible for any one to do work which requires accuracy and judgment without receiving great stimulus and an increase of power. To understand thoroughly the science and art of photography, one's knowledge must be broadened. One must know something at least of the laws of optics and of the laws of chemical action. Not only is a knowledge of facts increased, but technical skill, accuracy and persistent attention furnish the best of discipline. I congratulate you upon a work which helps you more and more to be masters of your own powers.

Second, by reason of your "fad," as the cynical sometimes call it, you are more interesting to yourself and to others. Mr. Robert Louis Stevenson in one of his charming essays maintains that every one should have some one topic, at the least, upon which he can converse with intelligence and enthusiasm. He tells the story of a night passed in a little Irish inn with a man whom he set down at first for the dullest of companions. Every topic of conversation was introduced in vain, until finally mention was made of the linen industry, when the stupid neighbor became alive with enthusiasm and talked for hours in the most intensely interesting way about the manufacture of linens. You, therefore, are fortunate in having something to which you are devoted, something which occupies your leisure, something which gives you an increased interest in the eyes of your friends.

The real object of this meeting is to reward you for the work which you have done so well, and not to inflict upon you punishment in the form of an address. Once more let me felicitate you upon your instructor, upon the work which you have accomplished, on the increase of your knowledge, and the strengthening and discipline of your faculties. May this be only the beginning of a pursuit which you will follow with pleasure and increasing profit as long as you are able to set up your tripods and develop your plates.

GRADUATES OF THE CHAUTAUQUA SCHOOL OF PHOTOGRAPHY.

Diplomas were awarded to the following graduates in the various classes:

In the Post-Graduate Class, Second Term.

No. 295.—Rev. John H. Bates, Mayville, N. Y.
No. 476.—W. F. G. Geisse, of New York City.

In the Post-Graduate Class, First Term.

No. 8.—Herbert F. Robinson, Phœnix, Ariz.
No. 29.—Rev. W. H. Kresge, Rhodes, Ia.
No. 35.—Miss Ella E. Switzer, Philipsburg, Pa.
No. 38.—Mrs. Laura H. Mull, Philipsburg, Pa.
No. 122.—G. W. Hart, Brooklyn, N. Y.
No. 155.—Miss Ella E. White, Providence, R. I.
No. 182.—Walter S. Waterbury, Greenwich, Conn.
No. 207.—Miss Mary S. Turner, Cambridge, Mass.
No. 221.—Mrs. C. L. Pierce, Riverside, Conn.
No. 250.—John C. Cummings, New Ipswich, N. H.
No. 301.—Miss Mary E. Booth, Titusville, Pa.
No. 439.—Miss Lydia Strawn, Ottawa, Ill.
No. 476.—W. F. G. Geisse, New York City.
No. 490.—H. M. Williamson, Denver, Colo.
No. 525.—Mrs. M. O. Wright, Fairfield, Conn.

In the Subordinate Classes.

No. 417.—Howard Hukill, Oil City, Pa.
No. 482.—Miss Grace E. Gurley, Troy, N. Y.
No. 484.—Miss E. H. Payne, Southold, N. Y.
No. 485.—A. Neal, Morrison, Colo.
No. 486.—Luke B. Carter, Titusville, Pa.
No. 487.—Thomas J. Bray, Warren, O.
No. 492.—Miss Mary J. Tennant, Meigsville, Ohio.
No. 494.—Miss Alice M. Guernsey, Chicago, Ill.
No. 489.—Miss Ella D. Moore, Palmer, Mass.
No. 495.—Miss Lucy D. Baldwin, Roanoke, Va.
No. 513.—A. S. Espey, Allegheny, Pa.
No. 531.—William H. Gardiner, Chicago, Ill.
No. 532.—P. W. B. Wessels, Capetown, South Africa.
No. 524.—Miss Agnes L. Pearson, Mt. Vernon, Westchester Co., N. Y.
No. 553.—Carl Ostberg, Worcester, Mass.
No. 555.—Miss Emma C. Watter, Mt. Pleasant, Pa.
No. 556.—Warren S. Wood, Denver, Colo.
No. 558.—Ed. B. Barnes, New York City.
No. 565.—Mrs. J. C. Lawson, India.
No. 569.—Francis C. Arthur, Pierce, Canada.
No. 631.—E. P. Munch, Zurich, Switzerland.

THE INSTRUCTOR'S REPORT.

Prof. Chas. Ehrmann read the following report for the School-Year of 1891–2:

The school instructs in four classes.

1. The Corresponding Class.

2. The advanced Corresponding Class, or Post-Graduate.

3. The Practising Class on the Assembly grounds.

4. The Local Class in New York.

The Corresponding Class is instructed in the theory and practice of Photography by printed lessons, prescribed reading and practice and by direct correspondence with the instructor.

To the Advanced Class is prescribed reading in physics, chemistry, photo-chemical processes and esthetics. Quarterly examinations testify to the advances made by students.

The Practising Class on the Assembly grounds is open from July 1st until the first week in September. Subjects of instructions are the most popular negative, especially orthochromatic processes, and various printing methods. Daily practice in studio, field and laboratory. Theoretical instruction in conjunction with practice.

The New York or Local Class caters to the individual desires of its members. Beginners receive instruction like that in the Practising Class; advanced students work under the direct supervision of the instructor. In portraiture, landscapes. reproductions, and photo-micrography, much work has been done during the last session of the class, and an anormous number of lantern-slides have been made.

The students of the Corresponding Class have received 1948 printed lessons during the year, and 371 special letters of instruction and criticism have been sent out.

A monthly supplement to The Photographic Times—our official organ—discusses exclusively school matters, and special information of various character is given in its query department.

The Chautauqua Exchange Club is in a flourishing condition, and a valuable aid to diffuse knowledge among its members.

168 students have been instructed, an increase of 17 over last year. The ages averaged from

nine to sixty-five years. Among them were 101 males, and 67 females.

For professional work were trained.....14
To assist in scientific and artistic pursuits.55
Strictly amateur.....99

To the Advanced Class belonged.....15
To the Practising Class.....57
To the Local Class.....29
To the Corresponding Class.....73

The following States were represented in the various classes by so many students:

New York, 57; Pennsylvania, 27; Massachusetts, 13; Ohio, 11; New Jersey, 8; California, 7; Colorado, 5; South Carolina, 4; Illinois, 4; Wisconsin, 3; Michigan, 3; Louisiana, 3; Virginia, 2; Rhode Island, 2; Vermont, 2; Kentucky, 2; New Hampshire, 2; Washington, 2; Connecticut, 1; Kansas, 1; Missouri, 1; Mississippi, 1; Texas, 1; Tennessee, 1; Florida, 1; Alabama, 1; West Virginia, 1; Arizona, 1.

Of foreign countries were residents of:

Canada, 5; Mexico, 1; Colombia, S. A., 1; Switzerland, 1; China, 1; India, 1; South Africa, 1.

FAILURES IN PHOTOGRAPHY.

[Read on Photographers' Day at Chautauqua]

WHEN our good friend and instructor, Prof. Ehrmann, asked me to give a little talk to-day, he said: "Take any subject with which you are perfectly familiar." Now it seems to me that I undertand failures more thoroughly than anything else.

Does not the fact that students of photography meet with so many and varied misfortunes, and yet persevere, speak for its exceeding fascination?

Persecution, too, we must endure.

We are called camera *fiends*, and every kind of joke is perpetrated upon our productions. We love to catch people unawares, and sometimes, alas! we find ourselves caught in far from graceful attitudes.

One day I ventured to comment on the appearance of a tall man crouched under the cloth covering a very low camera. My friend replied, "Now you know just how you look." But once, anyway, I used a camera so high that it was necessary to stand on a box in focusing (and the box broke down).

But the blunders we make! Alas! They are ever new. I used to say that I never would make the same mistake twice. I don't say so now. In fact, I have learned to be cautious in all my claims.

My experience commenced favorably. I had a nice outfit, and friends who were willing to give me every help. And I knew a few things even then.

One day, being in want of hot water, I saw a great kettle of clear liquid boiling on the stove in a photographic work room.

I helped myself with a tin dipper, when, to my horror, the whole mass began to change and a thick black scum formed on the tin. It was a silver bath, and I had done it a serious mischief.

In an almost equally trying way I learned something of the nature of hypo.

Well, my first plates were a success—possibly from the same fatality which often gives success to beginners in games of chance. What is photography at first but a game of chance? It was for me later to experience every variety of misfortune to which the camerist is prone.

Who of us has not made double exposures without the care necessary to secure a good composite? Who has not put the plate into its holder upside down? tried to develop the glass side? made plates too thin, then going to the other extreme made them too thick? eagerly tried new developers, only to sadly decide that success lies less in the medium used than in the person who uses it? But many of our trials as amateurs arise from inconvenient utensils, washing arrangements, etc.

Who has not scratched or broken a beautiful plate just when inflated with pride at its achievement? Who has not had rising hope dashed down by the alum bath?

Then the mysterious accidents.

A screw comes out of your front board; the plates spot and fog in consequence. The holders warp; the plates are light-struck. The small boy scientifically inclined examines your outfit independently. In consequence you are driven to despair by fogging plates. Life seems hardly worth living under so many discouragements and mortifications.

Still you persevere, for occasionally you achieve a dazzling success, and always you assure yourself, that a little more care would have saved you. That in science nothing happens without a cause.

The other day I set up my tripod in Palestine and snapped the shutter on the lecturer, with his audience, some ten feet away, at the instant when he turned toward me as if to protest against my audacity.

But when I developed the plate it presented a singular appearance. It was slightly streaked, and two ghostly spots appeared in the centre.

At first I felt a trifle superstitious, but finally decided that my focusing cloth must have dropped over the lens.

Of all places in which I have made views, Chautauqua seems to me the most favorable.

There is every variety of subject to choose from. Cloud effects water, fine buildings, cottages, children at play. People sit quietly as though hardened to the experience of having cameras pointed their way.

To be sure they sometimes grow weary and depart when you are just ready to snap. But I never knew any one refuse to keep quiet if asked to prettily.

One day last June I took my camera to the public garden in Boston. It was beautiful there, flowers, fountains, everything in good order, and (as it seemed to me) every one out to enjoy it. I too proved an attraction. As I stopped to make a view, an interested crowd gathered to watch me, and when the work was over one and another came, hat in hand, to say, "Eh, excuse me, what do you charge for pictures?

The distress of mind resulting from these disturbances was so great that two of my prettiest views got strangely mixed on the same plate. Now here at Chautauqua one attracts much less attention.

I have a notion that true photographers are born, not made. How many of us, I wonder, have the right formation of hand. Spatulate third finger. Triangle on the mount of Apollo.

When I began to make plates, in washing them I used to rub the films under water, something as I would clean a slate. I was using Seed plates then. They stood it better than some, but there proved to be a limit even to their endurance.

I wonder had I better go into kodak experiences? Advertisers say: "You press the button, we do the rest." Any one can make pictures; it is simplicity simplified. When I became the happy possessor of a kodak it never occurred to me that there could be any trouble in using it. I read the direction-book, and thought I knew all about it. With my untried kodak I went with friends on an excursion to Washington.

I pressed the button everywhere. My companions grew nervous at its continual sound.

Still I pressed, twisted, and clicked.

Our kind conductor gave me every opportunity for making views, would not let me be told that at Mount Vernon cameras were not allowed, and with perfect innocence I smuggled it in and used it freely.

I depended upon my pictures for souvenirs of our pleasant trip, and promised myself great pleasure in making presents to my friends of them. And we were to have a little souvenir list of names and addresses made up and illustrated with my kodak.

When I got home you can't think how anxious I was to have those pictures come out right.

I seriously thought of sending them to Rochester that the most skilful treatment might be given them. But I could not spare the ten dollars just then, so I set to work myself.

Do you know? They were double exposures right through. I had turned the key only halfway round. And the result was a peculiar sort of panoramic view—somewhat blurred and mixed.

I feel so badly about that experience even now, that I can't discuss the minor trials caused by chemicals from country apothecaries; knotholes in a dark-room; films melting away when set in the sun to dry.

You would become very weary if I tried to tell them all.

But from the fact that I still try to make pictures—you will infer that I am not utterly cast down.

"Hope springs eternal in the human breast;
Man never is, but always to be blest."—Pope.

Miss Mary S. Turner.

PHOTOGRAPHY AS A MEANS OF DEVELOPING CHARACTER.

[Read on Photographers' Day at Chautauqua.]

In accepting the invitation to make some remarks on this occasion, I feel it would be out of place for me, a mere tyro in our fascinating art, to say anything in regard to its various processes and methods of procedure.

Permit me therefore to present some thoughts of a different though kindred nature.

I prefer to speak not of what we can do with photography, but of what it may do for us.

This is the *Chautauqua* School of Photography; it therefore must bear some relation to the "Chautauqua idea." But what is the meaning of this phrase which we hear echoed and re-echoed from platform and hall until the very

wind, "whispering through the trees" seems to repeat it o'er and o'er in varied cadence?

For the answer we must turn to Chautauqua herself, but we will fail to catch it unless our view takes in the whole of the picture.

If we go to the gymnasium, we will be told that its aim is to develop the body. Pass up to the college, and learned professors will look up from their Latin and Greek or pause in the laboratory to emphasize the *development* of the intellect. Enter the great congregation on the Sabbath, or join the throng in the hall at the vesper hour, when "day is dying in the West," and you will feel that Chautauqua means the *development* of the religious feelings of our souls.

Gymnasium, college, hall, amphitheatre, the C. L. S. C., all with united voice using the photographer's word, declare that Chautauqua means *development*—the DEVELOPMENT of the body, the mind, and the soul—*the development* of *character*, on right lines, by proper means.

And recalling how the image on the sensitive plate slowly comes into view—first in bold outline—now held back by the sturdy policeman, bromide; now gaining in distinctness and delicate detail; now, perhaps, threatened with destruction by the intruder, fog; and now rendered permanent by the ardent grasp of the friendly hypo, we photographers should understand the force of the word development, better than any one else.

There is a very true sense in which each one of us is an animated plate-holder, containing within him a soul sensitive to the various influences that bear upon it, and in which there is developing a picture which will, eventually, become more permanent than any ever made by hand of man. This finished product is *character*. For its development we are largely responsible, and it is our duty to use all helps available, that it may become "perfect and entire—wanting nothing."

This brings me to my theme: *How can we make photography a help in the development of character?* I reply:

1. *By not allowing it to obtain the mastery over us.* We are amateurs, and therefore not dependent on it for daily bread. Let us make it our servant; not a fascinating Delilah to bind us hand and foot, and thus keep us from discharging our obligations to business, to the family, to the Church, and to society. We must never sacrifice duty to pleasure. To do so will blur our vision and make us unable to focus sharply, *i.e.*, to make clear distinctions between right and wrong.

2. *We must not yield to discouragement and cease our efforts because of failures.* I freely admit that it is very dampening to one's ardor to visit Niagara Falls, and, upon his return, to develop his plates and then to see them frill in the washing box and float gracefully away, leaving him nothing but a few pieces of clear glass for his pains.

It does not cause profound happiness to spend a day taking pictures in the Indian Reservation, only to find that they are all over-exposed—many of them beyond redemption.

One is in no frame of mind to sing the doxology when after attempting to take a picture of some charming scene he finds, in the dark-room that he has forgotten to draw the slide and expose the plate. And when in addition to all these things, you do your very best, time after time, only to hear your teacher's brief comment "too thin," "not good for much," and similar consoling (?) remarks, the temptation is very strong to abandon the camera and declare photography to be a delusion and a snare. Shall we do it? "By all manner of means," *No.* To do so, will only show that our mental fixing bath of determination is not strong, and will help to make our characters like our negatives weak and disappointing.

Tenacity of purpose is indispensable to a strong and symmetrical character.

3. *Let us cultivate the ability to see things in their right relations.*

There are some people whose faces are forever turned skyward. They are full of sentiment, and would be glad to "sit and sing themselves away to everlasting bliss," unmindful of the pressing claims of daily duties.

These persons have their horizon line too low on the plate, and as a consequence the picture is lacking in symmetry.

On the other hand, there are some who have neither eye nor ear for anything but the present and so-called *practical* affairs of life. *Their* horizon is *too high*, and their picture shows that they are of the earth, earthy.

Their foreground may show us the stately mansion, the fruitful field, and the patient ox; but there is nothing to suggest the grandeur, beauty, and glory of the unseen and eternal.

Let us learn from photography to place our horizon line in the right place. Time has *its* claims upon us, and so has eternity. Let us

"render to Cæsar the things that are Cæsar's, and to God the things that are God's."

4. *Let photography teach us to look for the pleasing things of life.*

We all know how much the beauty of a landscape depends upon our point of view, and how, by moving the camera a few feet, we are often able to discover beauty where at first sight, we could find nothing attractive. So, the common things of life and also its commonplace people when viewed aright may give us pictures of beauty which will be a joy forever.

5. *Let us be careful as to the kind of pictures which we keep in the picture gallery of the mind.*

The scenes in the past which we call up most frequently and dwell upon most lovingly; the visions which are most welcomed as we walk alone through the enchanted land of the imagination, exercise a powerful influence in forming our characters. Let our motto and our practice be, "Keep only the best."

6. *Let us learn to work patiently, carefully and in accordance with the established laws of nature.*

We *must* be patient. Impatience in the dark-room and in the studio has ruined many a fine picture; and many a character has been marred by the unwillingness of people to wait patiently for the development in the proper time of the faculties of the mind. Forcing development always means disappointment. "First the blade, then the ear," etc.

We *must* be *careful*. Carelessly drop a little acetic acid into your developer and your picture will be spoiled. Let the sharp criticism and unkind word have utterance and you and your neighbor suffer.

We must recognize nature's laws. Working against the sun will bring failure, and setting ourselves against the eternal laws of truth and righteousness cannot but end in disaster.

7. *Photography warns us to exercise a wise discretion as to the influences to which we expose ourselves.*

A palace and a pigsty can be photographed with equal ease. We have only to point the camera, remove the slide, and uncap the lens, and the picture is made. Our souls in like manner will receive lasting impressions from the objects set before them. We are often obliged to walk amid the stagnant pools of impurity and in an atmosphere hazy with the smoke caused by false teachings on moral subjects; but we need not give them access to our inner selves.

Let us keep the lens closed and press on to the heights where the pure sunlight of truth abounds and there with the joy of conscious right-doing let us allow the good, the true, and the beautiful to impress themselves upon us until we become transformed forever.

8. Our final lesson is, *avoid extremes.* If we under-expose our plate the resulting picture will be disappointing; over-expose, and it will vanish. Develop too little or too much, and the best results will not be obtained. Print but slightly and the pale picture will create disgust; print too much and the blackened paper will proclaim the outrage. Tone insufficiently and lack of permanency will be your punishment; over-tone and the sickly hues resulting will proclaim to the world your blunder.

And so in the moral world. Superficiality, lack of conviction on moral questions, insipid dilettante-ism, a failure to take hold on life as a serious thing, will produce a character which will be the contempt of the sober, the sport of the fun-loving, and the aversion of all.

On the other hand, the extremist will intensify opposition, weaken the efforts of the judicious, injure his cause, and fail in his efforts. Let us be earnest and thorough; but let us remember that there is a point where self-assertion changes to audacious impudence, where courage becomes presumption, and firmness changes to unreasoning obstinacy.

S. A. Espey.

CHAUTAUQUA LETTER.

According to the general programme the School of Photography will be closed with the last days of the session of the Assembly on the 26th of the month, nevertheless we are still busily engaged with a variety of work, and several new students have subscribed to a limited course of instruction during the last few days.

Likewise have new contributions to our annual exhibition been received, fully testifying to the faithful adherence of our students to their photographic *alma mater*. Of these contributions, prominent among all others displayed, is a collection of genre pictures on matt-surface paper by Miss Emilie V. Clarkson, splendidly arranged, and lighted groups, representing pastoral life in many instances. There is life and artistic feeling in these pictures, the motives are well chosen, and were any of the American amateurs to claim to be an artist, the epithet is most certainly due to

Miss Clarkson, one of our most talented and efficient students. Neal and Wood, both of of Colorado, have sent other exhibits, scenes in the Rocky Mountains, if possible of still higher merits than those previously spoken of.

The genial A. M. Martin and his young son, Percy, have contributed a large collection of excellent photographs, marine views and forest scenes, taken instantaneously at the Bermuda Islands.

Our Indian expedition has been a decided success, photographically and from the point of view of the anthropologist. The picturesque country of Cattaraugus and Erie Counties, as well as their aboriginal inhabitants, induced Professor Fred. Starr to deliver short but interesting lectures *en voyage*, and we of the camera and sensitive plate have illustrated them by "stante pede," snap-shot and time exposure.

On the 16th of this month we held another open air lantern exhibition, and showed 185 slides, principally Chautauqua scenes, all made by students of the school. An innumerable mass of spectators cheered our attempts from the veranda of and the lawn before the Athenæum.

The Summer Class of 1892 can well compare with any of its predecessors. In number of students, in their intelligence, diligence and general desire to improve in practical work and theories, the present class, I am inclined to think, can scarcely find a rival. Not so great a variety of work has been done as in previous classes, but in instantaneous work, in lantern-slide making, and particularly in portraiture, most excellent results have been obtained.

Orthochromatic methods have been much cultivated, and thanks to Mr. Carbutt, who now manfactures plates of that description of much higher sensitiveness than formerly, the method has been successfully applied to instantaneous work of all description, as well as for timed landscapes and still-life. With these highly sensitive plates, and the new Scovill Elite Shutter we have been enabled to make snap-shots with our old stand-by the Waterberry B lens, capable of rivaling others made with more costly objectives.

Within a short time we shall all return to our cares and *penates*, but the practising class of 1892 will live long in the pleasant remembrance of her many students and her grateful instructor.

Charles Ehrmann,
Instructor C. S. P.

Chautauqua Assembly Grounds, Aug. 20, 1892.

CHAUTAUQUA PHOTOGRAPHIC EXCHANGE CLUB.

A meeting of the Chautauqua Photographic Exchange Club was held after the annual meeting of the school. President Ehrmann was in the chair. The constitution and by-laws of the club were read and adopted for the ensuing year without alteration. The Secretary reported 34 members in good standing and the Treasurer a balance of $4.31.

The election of officers for the year 1892–3 resulted as follows: President, Henry E. Canfield, of Akron, Ohio; Secretary, Mrs. C. L. Pierce, "Elmhurst," Riverside, Conn.; Assistant Secretary, Mr. Gould W. Hart, Brooklyn, N. Y.

The August exchanges, due on August 17th, had not yet arrived at the assembly grounds on the day of the meeting. Its criticism must therefore be postponed until the next issue of the Chautauqua supplement in October.

GLEANINGS FROM OLD BOOKS.

(*Continued from page* 424.)

Thermography.

Mr. Robert Hunt, in experimenting on the images of Möser, was led to admit a different theory of the cause that produces them. His hypothesis, which he sustains by many interesting experiments, is that they are produced by *exchange of heat* between the bodies placed into contact. And it may not be out of place to remark here that the effects of light and heat present in so many circumstances such an analogy that they may be confounded in one: In their physical properties they are refracted and polarized in the same manner. Dr. Draper, says Mr. R. Hunt, mentions a fact which has been long known: "That if a piece of a very *cold* glass, or, what is better, a *cold* polished metallic reflector, has a little object, such as a piece of metal, laid on it and the surface breathed over once, the object being then carefully removed, as often as you breathe on it again, a spectral image of it may be seen, and this phenomenon may be exhibited for many days after the first trial is made."

On repeating this simple experiment I find, says Mr. Hunt, whom we quote in these and the following lines—that it is necessary for the production of a good effect to use dissimilar metals; for instance, a piece of gold or platina on a plate of copper or of silver will make a very decided image, whereas copper on silver on their respective plates gives but a very faint one, and bodies which are

bad conductors of heat placed on good conductors, make decidedly the strongest impressions when thus treated.

I placed upon a well polished copper-plate, a sovereign, a shilling, a large silver medal, and a penny. The plate was gently warmed by passing a spirit lamp along its under surface; when cold, the plate was exposed to the vapor of mercury; each piece had made its impression, but those made by the gold and the large medal were more distinct, not only was the disc marked, but the lettering on each was copied.

The above coins and medal were all placed on the plate, and it was made too hot to be handled, and allowed to cool without their being removed; impressions were made on the plate in the following order of intensity, gold, silver, bronze, copper. The mass of the metal was found to influence materially the result; a large piece of copper making a better image than a small piece of silver. When the plate was exposed to vapor, the result was the same as before. On rubbing off the vapor it was found that the gold and silver had made permanent impression on the copper. A *silvered* copper-plate was now tried with a moderate warmth. Mercurial vapors brought out good images of the gold and copper; the silver marked, but not well defined.

Having repeated these experiments many times with the same results, I was desirous of ascertaining if electricity had any similar effect: powerful discharges were passed through and over the plate and discs, and it was subjected to a long-continued current without any effect. The silver had been cleaned off from the plate; it was now warmed with the coins and medals upon it, and submitted to discharge from very large Leyden jar. On exposing it to mercurial vapor, the impressions were very prettily brought out, and, strange to say, spectral images of those which had been received on the plate when it was silvered. Thus proving that the influence, whatever it may be, was exerted to some depth in the metal.

With a view of ascertaining the distance at which bodies might be copied, I placed upon a plate of polished copper a thick piece of plate glass, over this a square of metal, and several other things, each being larger than the body beneath. These were all covered by a deal box, which was more than half an inch distant from the plate. Things were left in this position for a night. On exposing to the vapor of mercury it was found that each article was copied, the bottom of the deal box more faithfully than any of the others, the grain of the wood being imaged on the plate.

Having found by a series of experiments that a blackened paper made a stronger image than a white one, I very anxiously tried to effect the copying of a printed page or a print. I was partially successful on several metals, but it was not until I used copper-plate amalgamated on one surface, and the mercury brought to a very high polish, that *I produced copies from paper, line engravings, wood-cuts, and lithographs, with surprising accuracy, quite equal to the early daguerreotypes and the photographic copies prepared with the chloride of silver.**

The following is the process adopted by me, which I consider far from perfect, but which affords to us very delicate images: A well-polished plate of copper is rubbed over with the nitrate of mercury, and then well washed to remove any nitrate of copper which may be formed; when quite dry, a little mercury taken up on soft leather or linen is well rubbed over it, and the surface worked to a perfect mirror.

The sheet to be copied is placed smoothly over the mercurial surface, and a sheet or two of soft clean paper being placed upon it, is pressed into equal contact with the metal by a piece of glass or a flat board; in this state it is allowed to remain for an hour or two. The time may be considerably shortened by applying a very gentle heat for a few minutes to the under surface of the plate. The heat must on no account be so great as to volatilize the mercury. The next process is to place the plate of metal in a closed box, prepared for generating the vapor of mercury. The vapor is to be slowly evolved, and in a few seconds the picture will begin to appear; the mercury attacks those parts which correspond to the white parts of the printed page or engraving, and gives a very faithful, but somewhat indistinct image. The plate is now removed from the mercurial box, and placed into one containing iodine, to the vapor of which it is exposed for a short time; it will be soon very evident that the iodine vapor attacks those parts which are free from mercurial vapor, blackening them. Hence there results a perfectly black picture, contrasted with the gray ground formed by the mercurial vapor. The picture being formed by the vapors of mercury and iodine, is, of course, in the same state as a daguerreotype picture, and is readily destroyed by rubbing. From the depth to which I find the impression made in the metal, I confidently hope to be enabled to give to these singular and beautiful productions a considerable

* It is evident that if one can obtain a perfect image in mercury from a design in lines, this image can be converted into a plate engraved in intaglio or in relief. The process is obvious.—P. C. D.

degree of permanence, so that they may be used by engravers for working on.

It is a curious fact that the vapors of mercury and iodine attack the plate differently; and I believe it will be found that vapors have some distinct relation to the chemical or thermo-electrical state of the bodies upon which they are received. Möser has observed this, and attributes the phenomena to the colors of the rays, which he supposes to become latent in the vapor on its passing from the solid to the more subtle form. I do not, however, think this explanation will agree with the results of experiments. I feel convinced that we have to do with some thermic influence, and that it will eventually be found that some purely calorific action is produced which effects some change in the polarities of the ultimate atoms of the solid.

Although attention was called to the singular manner in which vapors disposed themselves on plate of glass and copper two years since, by Dr. Draper, Professor of Chemistry at New York, and at about the same time, to the caloric power of the solar spectrum, by Sir John Herschel (1840), and to the influence of heat artificially applied, by myself, yet it is certainly due to Mr. Möser, of Königsberg, to acknowledge him to be the first who has forcibly called the attention of the scientific world to an inquiry which promises to be as important in its results as the discovery of the electropile of Volta.

As to the practical utility of this discovery, when we reflect on the astonishing progress made in the art of photography since Mr. Fox Talbot published his first process, what may we not expect from thermography, the first rude specimens of which exhibit far greater perfection than the early efforts of the sister art?*

The picture by vapors has lately given rise to a very interesting discussion at the Physical Society of England. We quote from *The Photographic Work* the following *compte rendu* of the discussion:

"At the Physical Society, on the 24th ultimo., Mr. W. B. Croft discoursed on 'Breath and Vapor Figures,' and described a method by which he obtained the best results. The coin of which an impression is to be made is placed on an insulating plate; over the coin is a carefully cleaned glass plate, which is to receive the impression, and on this glass plate another coin is placed. The two coins are then connected with the terminals of a source of electricity giving about a one-inch spark, and the electric tension is maintained for about two minutes. On removing the glass plate and breathing on it, definite pictures of the coins are seen on the glass, and an examination with a microscope showed that moisture is deposited on the whole surface of the glass; but the size of the granulation increases on the darks of the picture. Freshly split mica is very sensitive to the influence causing the breath figures, and by laying printed matter between such surfaces, and maintaining the contact for about ten hours, very perfect reproductions can be made.

"The Rev. F. J. Smith sent a communication to the same meeting, this communication being accompanied by photographs of vapor figures. His experiments led to the belief that the nature of the surrounding atmosphere had an important influence, the best results being obtained in oxygen, and no results were obtained in a vacuum.

"Professor Sylvanus Thompson said that better results could be obtained by using a small induction coil, giving sparks about one-eighth of an inch, and keeping up the action for about five seconds, and he suggested that the Hertzian electrical oscillations—now known to be identical in their essential nature with light—had to do with the phenomenon. It was mentioned at the meeting that, instead of using mercury vapor to develop the images, it was possible to do so by finely powdered red lead allowed to settle down softly on the plate, and the red-lead ground might form a resist to the action of vaporous hydrofluoric acid.

"So many observations have been made regarding the formation of the so-called vapor or breath figures, and the condition of the surface attracting the vapor has such a suggestive bearing on the physical theory of the latent photographic image, that it is a matter of surprise that so little has been done to throw light upon the physical basis of the phenomenon, and as a suggestion for research in this direction we may indicate possible causes of the images; but it should be borne in mind that several causes may conduce towards the phenomenon.

"In the first place, we may suggest that, in some cases, the material may be put in strain or tension by unequal expansion, just as glass is put in strain by the pressure of a blunt point upon it. An examination by polarized light might serve to detect a condition of strain.

"In the case of such experiments as those to which we have referred as made by Mr. Croft, it is quite possible that the glass may have been polarized, just like the di-electric of a Leyden jar is polarized, and the projections of the coins may have served to render the polorization more considerable immediately against these projections. It

*See N. Hunt's "Photography." American edition (1852), p. 222, *et seq.*

must be remembered that the charge of a Leyden jar does not rest in the coatings, but in the glass, as the coatings may be changed without interfering with the charge. The polarization of the dielectric may, in reality, be, in some sense, an electrolytic action; indeed, a polarization of the glass, analogous to the polarization taking place in a slab of jelly containing chloride of ammonium when submitted to a current between platinum plates.

(*To be continued.*)

Notes and News.

Mr. Edward Frederick Zimmerman, son of E. O. Zimmerman, the well-known photographic merchant of St. Paul, and Miss Laura Emma Heinrich were married Wednesday afternoon, August 24th, at 5 o'clock. THE PHOTOGRAPHIC TIMES extends its heartiest greetings to the young couple.

Mr. W. H. Walmsley, of W. H. Walmsley (Ltd.), of Philadelphia, has recently connected himself with the Geneva Optical Co. of Chicago, where he will have charge of the photographic department. It is needless to say that the department will be well managed with Mr. Walmsley at its head.

J. C. Somerville, the enterprising photographic merchant of St. Louis, has been spending several weeks in the East, enjoying a well-earned rest.

Mr. Somerville called at the headquarters of THE PHOTOGRAPHIC TIMES last week, and appeared to be in excellent health. Wednesday, August 17th, he sailed for Europe.

Mr. George Mason, of Glasgow, entertained a number of the members of the Photographic Convention of the United Kingdom of Great Britain, after the convention was over, which was recently held in Edinburgh. One of the guests, Mr. J. Traill Taylor, editor of the *British Journal of Photography*, writes that the week thus spent was the pleasantest he ever experienced in his life.

S. W. Burnham and Gayton A. Douglass are busily engaged at the Observatory in Chicago, every clear night, in the pursuit of stellar photography. Dark nights they devote to dark-room work, "sometimes resting a little," as Mr. Douglass writes, "and talking photography, astronomy, etc."

Professor Houston suggests that it does not seem improbable that a brain engaged in intense thought should act as a centre for thought radiation, nor that these radiations, proceeding outwards in all directions, should affect other brains on which they fall, provided that these other brains are tuned to vibrate in unison with them, and thus produce in them sympathetic vibrations resulting in various or similar thought phenomena.—*Photo-Work.*

We have received a very pretty souvenir containing specimens of the highest artistic merit by the leading photographic artists of the country, made on Cramer plates, the prints on aristotype paper of the American Aristotype Company. The negative work as shown in these prints is especially fine, and reflects the highest credit not only on the artists who made the pictures, but upon the excellent plate which they employed.

Among the curious suggestions as to the function of that wide range of vibratory force which we now regard as identical with light in nature, though so different in wave-length as to be outside the range of vision, is one by Professor Houston. It is made in especial reference to those vibrations known as Hertzian electrical oscillations, which are now recognized as essentially identical with light, though of greater wave-length.

THE DAGUERREOTYPE.

You hev to holt it sidewise
  Fer to make the lightness show,
'Cuz it's sort uh dim an' shifty
  Till you git it right—'bout *so!*
An' then the eyes winks at yeh,
  An' the mouth is cherry-ripe.
Law! it beats your new-style picters,
  This old digerrytype!

Thar's a blush acrost the dimples
  Thet burrows in the cheeks;
F'om out them clumps o' ringlets
  Two little small ears peeks,
Thet brooch thet jines her neck-gear
  Is what they used to wear;
A big gold frame thet sprawled around
  A lock o'—some one's hair.

'Twas took 'fore we was married
  Thet there—your maw an' me.
An' times I study on it,
  Why, 't fazes me to see
Thet fifty year ain't teched her
  A lick! She's jest the same
She was when Sudie Scriggens
  Took Boone C. Curds's name.

The hair is mebbe whiter
  'An it was in '41,
But her cheeks is jest as pinky,
  An' her smiles ain't slacked up none.
I reckon—love—er somethin'
  Yerluminates her face,
Like the crimsont velvet linin'
  Warms up the picter case.

'S I say, these cyard-boa'd portraits,
  They make me sort uh tired,
A-grinnin' forf upun yeh
  Like their very lips was wired!
Give me the old digerrytype,
  Whar the face steals on your sight
Like a dream that comes by night-time
  When your supper's actin' right.

—EVA WILDER M'GLASSON, *in Harper's Weekly.*

THE AMERICAN LEAGUE OF AMATEUR PHOTOGRAPHERS.

THIRTY-SIX delegates, representing twenty-one amateur photographers' clubs in various parts of the United States, met at the rooms of the Society of Amateur Photographers of New York, 113 West Thirty-eighth street, on the afternoon of July 21st, and approved of the plan and adopted a constitution and the name of the American League of Amateur Photographers.

The league is patterned in many respects after the league of American Wheelmen. It is established to bring about a closer union between camera societies, to promote the science and art of photography, to encourage and advance photography separate from its trade, commercial, or professional relations, and to bring members into closer relationship in acquiring useful information.

A division will be organized in each State, and a national council will be held in May, 1893, to consist of three delegates and three alternates from each club. State divisions will appoint local officers in each town or centre, who will secure privileges and advantages, and furnish information to a member on presentation of his membership card. Arrangements will be made with hotels to furnish dark-rooms and other conveniences for photographers. The league will publish a journal, and the new organization will take the place of the American Photographic Conference. It is proposed to secure to members a special discount in purchasing photographic materials. The membership dues will be $1 yearly, and can be forwarded to the General Secretary, T. J. Burton, 113 West Thirty-eighth street, New York.

Officers of the National Council were elected as follows: President—Paul L. V. Thiery, Newark (N. J) Camera Club; First Vice-President—Dr. George L. Parmele, Camera Club of Hartford, Conn.; Second Vice-President—Frances B. Johnson, Washington (D. C.) Camera Club; Treasurer—W. H. Drew, Lynn (Mass.) Camera Club; Secretary—T. J. Burton, Society of Amateur Photographers of New York.

The New York division of the league was organized at the Amateur Society's rooms, and these officers were elected: President—Frank La Manna, Brooklyn Academy of Photography; First Vice-President—Dr. Ely Van De Walker, Syracuse Camera Club; Second Vice-President—James H. Stebbins, Jr,, New York Society of Amateur Photographers; Secretary-Treasurer—H. S. Fowler, Brooklyn Academy of Photography.—*N. Y. Times.*

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: I have at times been on the point of writing to you to express the gratification that I receive from looking at the admirable illustrations in THE PHOTOGRAPHIC TIMES. I have the choicest upon my studio table, and often refer to them with pleasure and profit to myself and to friends calling.

Very respectfully,
XANTHUS SMITH.

"I am hungry to see a copy of that indispensable journal, and hail the arrival of it with delight," writes W. H. Walmsley, now with the Geneva Optical Co., of Chicago, in regard to THE PHOTOGRAPHIC TIMES.

HIS OWN BRAND.

"I notice that whenever he swears he begins thus: 'By the shades of'——."

"That's natural, he's a photographer."

Queries and Answers.

324 X. Y. Z.—Can I use magnesium light in combination with daylight at the same time, when, for example, a room is but poorly illuminated, and other conditions exclude a prolonged exposure?

324 *Answer.*—Most certainly you can; it is done very frequently in the present.

325 ALEXANDER.—Can you give me a reliable formula to develop positives (ferrotypes) on Argentic plates?

325 *Answer.*—

A.

Pyrogallol	1 drachm
Water	12 ounces
Nitric acid	5 drops

B.

Water	12 ounces
Bromide potassium	½ ounce
Aqua ammonia	½ ounce
Nitrate potassium	3 drachms
Chlorate (not chloride) of potassium	1 drachm
White candy sugar	1 drachm

Take 1 drachm of A and 3 drachms of B mixed with 1½ ounce of water.

Expose fully, develop carefully, and fix in a solution of potassium cyanide 1 in 20.

We take occasion to answer herewith another query relative to the above formula, namely:

What is the use of putting sugar in the B solution?

We answer: To increase the brilliancy of the whites, or rather to give the whites a metallic lustre.

326 F. C. BLACK.—Please let me know of a good formula for kallitype printing? Those published of late are far from being satisfactory.

326 *Answer.*—The best formulas, those prescribing silver with the organic iron salt, are unfortunately kept secret by their respective inventors. If the solutions of "British Journal Almanac" for 1891, page 477, and those of "American Annual of Photography" for 1892, page 273, are correctly compounded and properly handled, the resulting prints are generally quite good.

Formulas prescribing silver to be incorporated with the sensitizing solution and a subsequent development with borax or tartrate of sodium and potassium are generally not as reliable as they should or might be. We have had the best results by substituting the ferric oxalate with its ammonium or sodium double salt, coating the paper with it first and sensitizing afterwards with a 5 per cent. solution of nitrate of silver. Citrate of iron and ammonia, the same as we use in blue printing, and developed with an acidified solution of silver nitrate, gives a very fine print of red color, assuming a beautiful bright purple color with acid ter-chloride of gold, and with neutralized gold the ordinary photographic tone.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor

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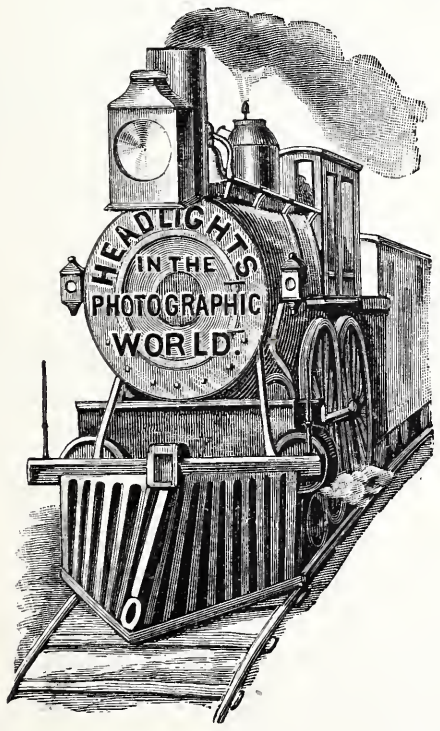
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Thirteenth.—Because its rates are lower than any photographic publication, considering the size of page and the extent of circulation.

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Sixteenth.—Because no advertisement in any way objectionable is admitted to its pages.

Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

Business Notices.

WANTED.—August 28, 1891, issue of THE PHOTOGRAPHIC TIMES by Dr. A. C. Mercer, 324 Montgomery Street, Syracuse, N. Y. Will pay 25 cents for it.

FOR SALE.—4 x 5 Gennelli Camera, for making four minette pictures on a plate. Good condition. Price $12. Address G. B., care THE PHOTOGRAPHIC TIMES.

WHO HAS BEST BARGAIN in second-hand 8 x 10 Lens for me? Portrait or View. First-class make only. Write early. Low prices.
FRANK E. HEGE, Salem, N. C.

FOR SALE.—One of the oldest and best equipped galleries in the city of Denver, Col.; centrally located, and good prices. Newly refitted up to 18 x 22. Good reasons for selling. Correspondence solicited. Address "PHOTOGRAPHER," care PHOTOGRAPHIC TIMES.

FOR SALE.—A new 4¼ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
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W. P. BUCHANAN, Importer, Philadelphia.

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LANGILL, 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

A BARGAIN.—$425 cash will buy my fully equipped gallery; no opposition; good reputation, and portable branch. Buildings and equipments valued at $750; cause, poor health. Address
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J. F. STANDIFORD, Muscogee, Indian Territory.

A RARE CHANCE TO MAKE MONEY.—Here it is. My gallery will invoice over $15,000. Twenty-five thousand selected registered negatives that are paying the interest on $10,000. Everything in first-class working order; expenses low. Every convenience for doing a large business. Instruments from 20 x 24 down; all first-class. As I am now past the years allotted to man, I will sell for cash at one-third the value. Location one of the best in the city; also the oldest and best established in Chicago. A rare chance for a young man to step into a paying business. Apply to
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Photographie par Emulsion Sensible. A. Chardon, Paris, 1880 10

American Annual, 1887, cloth 50

" " 1888, " 50

" " 1890, " 50

The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47..... 25

Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50

pp. 113, paper 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English), Vols. I. and II. (except No. 18), 1890, 1891.

A few *very* odd numbers of Photographic Notes, Daguerreian Journal, Photographic and Fine Art Journal, Magic Lantern Journal, Photographic Herald, etc.

Employment Offered and Wanted.

SITUATIONS OFFERED.

A first-class printer and toner wanted by McAlpin & Lamb, Portland, Oregon. Must be first-class; salary from $15 to $20, depending upon ability. Address with references.

$20 to $25 paid each week for reliable, industrious man to operate and retouch; no Sunday work. None but first-class wanted. Send samples and photo of self. D. H. Swartz, Houston St., Fort Worth, Texas.

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Partner wanted, with or without capital; will pay salary if preferred; must be A No. 1 operator with a successful experience in large work, and a fine retoucher. Address with samples and terms to A. E. Hotchkiss, Norwich, N. Y.

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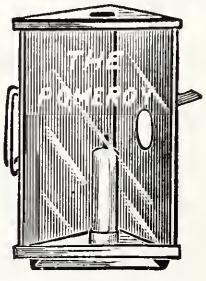
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Para-amidophenol (pure)	100 grains
Sodium sulphite (crystals)	3 ounces
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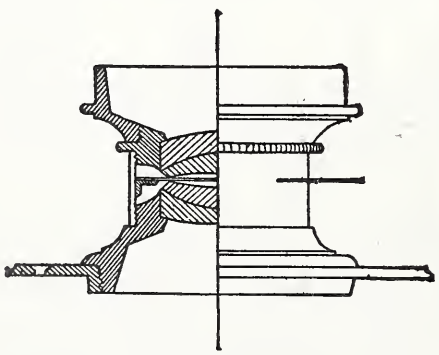
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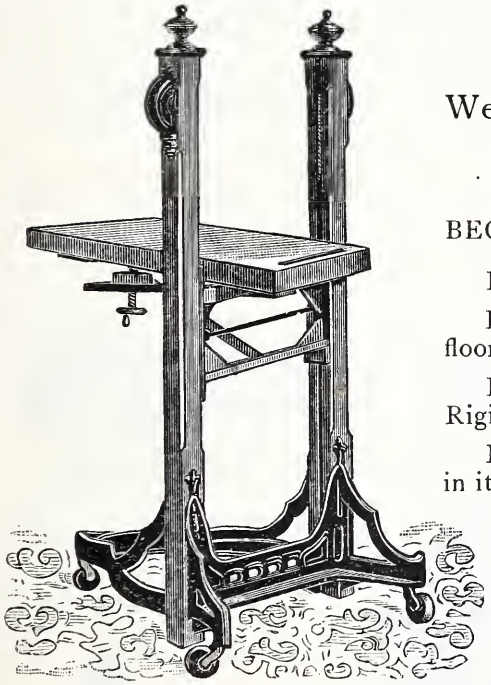
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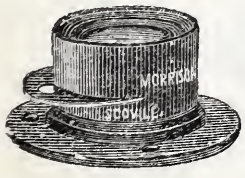
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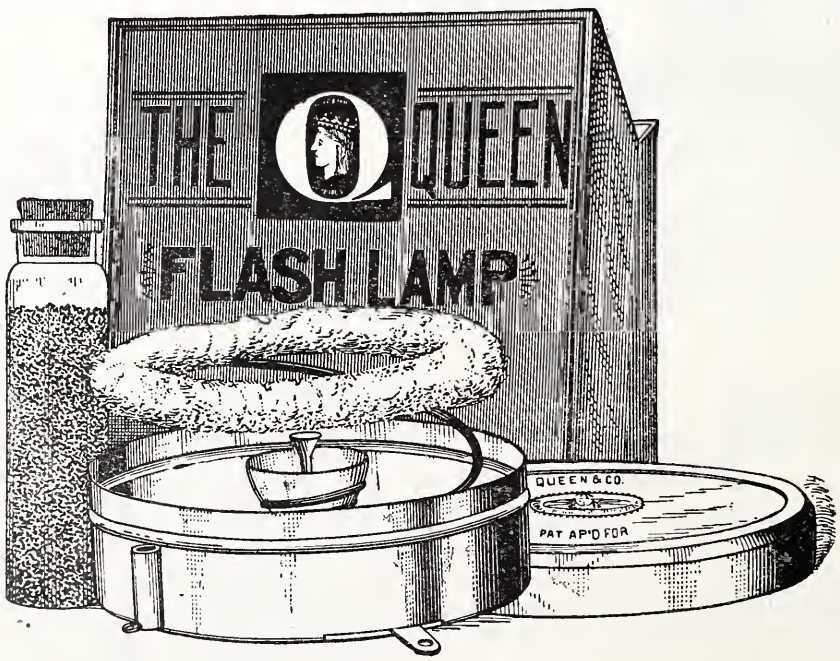
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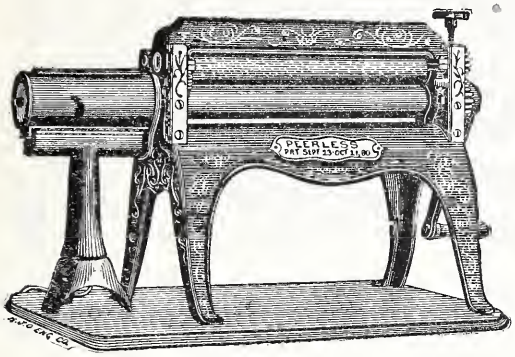
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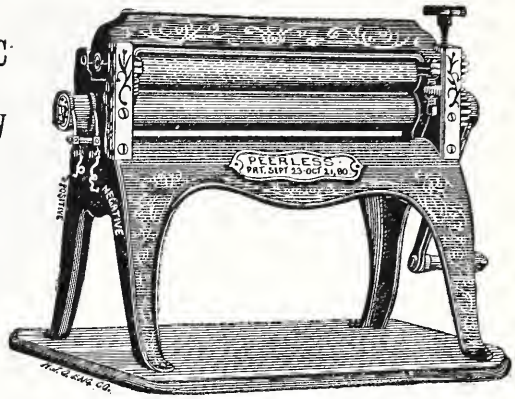
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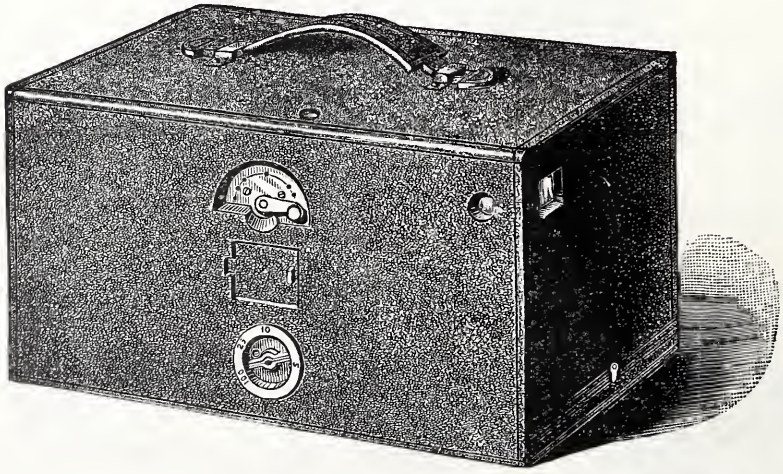
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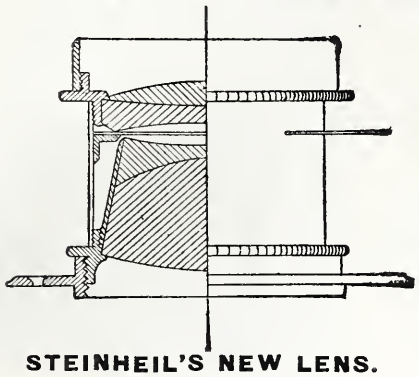
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These Plates make the most perfect Lantern Slides, either by contact printing by artificial light or by means of the camera from larger or smaller negatives and give, at will, either engraving black or rich warm purple tones; they are also specially suitable for reproductions of line subjects for photo-lithography, when used for this purpose with our improved Pyro Transparency Developer, they give any desired density with perfectly bare glass in the high lights.

Price, 3¼x3¼ (English Lantern Size), 75 cts. per doz.

Edwards's Special Pyro Transparency Developer.

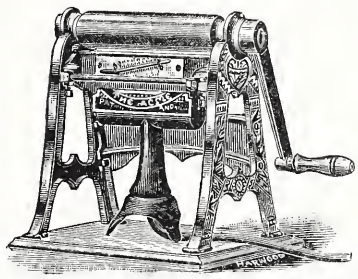
For Lantern Slides and Transparencies.

By means of this new Developer the most perfect Transparencies can be obtained on suitable Dry Plates with the greatest facility. It is the only Developer yet discovered which will produce (on Rapid Gelatine Plates) Lantern Slides of the highest class with RICH WARM TONES and perfectly clear glass in the highest lights.

Price, Two 8-oz. Bottles in Case, $1.50.

B. J. EDWARDS & CO., Manufacturers.

For Sale by THE SCOVILL & ADAMS CO.



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Acme Amateur Rotary Burnisher.

NOTE.

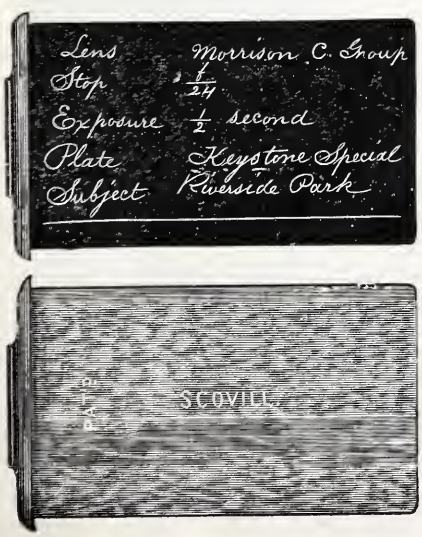
Quickest Heater in the world.
Saves seventy-five per cent. of gas, oil or alcohol.
No sweat, no smoke, no smell.
Acme Horizontal Thermometer attached.
No blistered prints, uniform results.
Will burnish an 8 x 10 and all sizes under.
Simplest Rotary Burnisher ever made.
One-hand wheel adjustment.
Full Nickel Finish.
Guaranteed in every particular.

PRICE, OIL, GAS, OR ALCOHOL, $15.00.

FOR SALE BY ALL DEALERS.

MANUFACTURED BY

ACME BURNISHER CO.,
FULTON, N. Y.



REGISTERING SLIDES.

(PATENTED.)

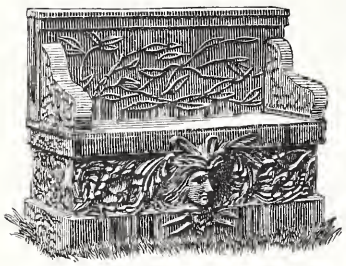
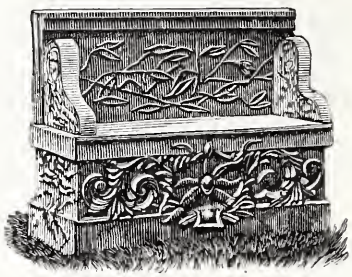
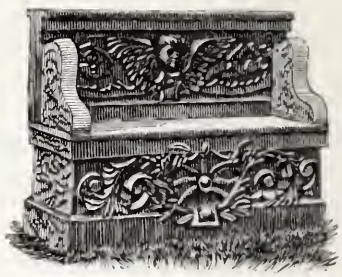
In the pleasure or excitement attendant upon picture-taking, holders slides have been so changed about that the note-book afforded no clue to their identity. All photographers, whether professional or amateur, who have in time past puzzled their brains in the endeavor to solve such vexatious questions as these—

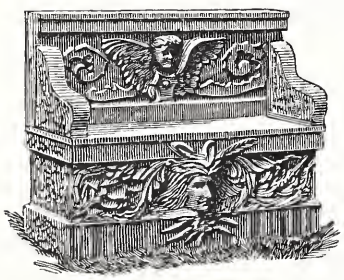
"Have I or have I not exposed that plate?"
"If exposed, was the plate used for that prized picture?"
"Shall I incur the risk of making a double exposure?"

henceforth will have themselves only to find fault with if they do not procure and use in their dry-plate holders the patent registering slides, or as they have been called "Record Slides." These can be written upon with slate or lead pencil *ad libitum*, and the writing erased without injury to them.

Registering Slides *will be supplied with new American Optical Co.'s Dry Plate Cameras and Amateur Outfits up to* 10x12 *size without addition to price list.*

SOMETHING NEW.



The Eldorado

WALL and BENCH COMBINATION.

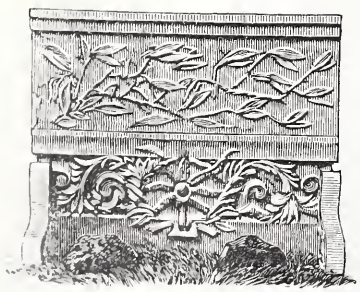
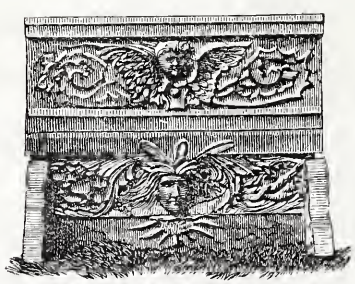
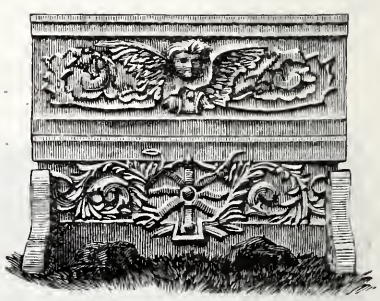
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Makes Eight (8) different Combinations.

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These are the only stamp portraits that are gummed and perforated, and being the exact size of ordinary U. S. postage stamps, photographers and others will find them an interesting novelty in advertising their business, as they can be mounted on business and visiting cards, letter-heads, etc.

We also make a size four times larger than the stamp pictures. Send for samples and prices, which will be furnished on application.

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Sole Agent,
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Black, Sepia and Water Colors,

HAVE A DISTINCTIVE CHARACTER OF THEIR OWN.

Salient points of our Water Colors are faithful retention of likeness, delicacy of coloring and brilliancy of tone.

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SOMETHING NEW UNDER THE SUN—A REVOLUTION IN THE ART OF MANUFACTURING.

After many years of scientific research a preparation for the salting of plain photographic paper has been discovered, by which method the finest printing results are obtainable. The advantages are apparent to all.

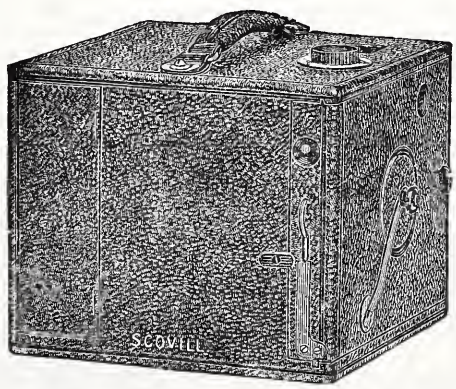
I.—Constant use will not discolor the silver bath.
II.—Will produce the finest detail in printing.
III.—Any desired tone may be obtained from sepia to jet-black with less gold than ever before.
IV.—The "*New Matt-Surface*" paper when sensitized will keep fresh for a long time if properly stored.
V.—The price has not been advanced.

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THE SCOVILL & ADAMS COMPANY,
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Sample Sheets, by mail, 10 cents each.

THE WATERBURY DETECTIVE CAMERAS.



MANUFACTURED BY THE AMERICAN OPTICAL CO.

Timed and Instantaneous Photographs. This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size, It is

The only Detective Camera made for plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

The Recessed Finder shows *the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

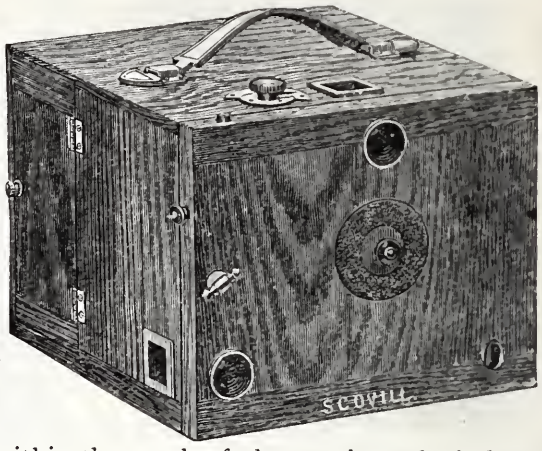
The Focusing Scale is beside the Finder, where it may be readily seen and adjusted.

Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders	$25 00
5 x 7 Waterbury Detective Camera, with 2 Double Holders	40 00

FOR SALE BY ALL DEALERS.

IMPROVED KNACK KNACK DETECTIVE CAMERAS



To meet the demand for a cheap Detective Camera within the reach of the youth, and of those who want to make but a moderate investment in photographic appliances, we have introduced the Knack Camera, which is certainly lighter and more compact than any other cheap detective camera in the market, and what is still more important, has a much more expensive and more perfect lens.

This Double Combination Instantaneous Lens, with Interchangeable Stops, when bought separately costs as much as the whole camera.

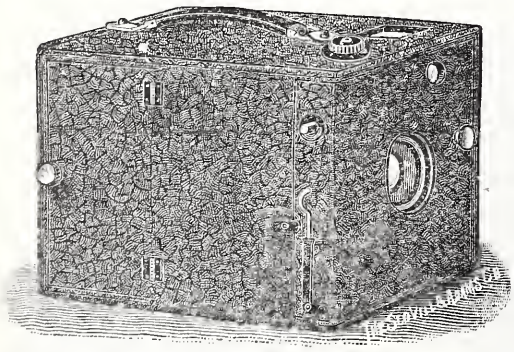
The whole front of this camera is hinged, which is a great convenience. The camera has a Recessed Finder, an Instantaneous and Time Shutter with Speed Regulator, Cap for timed exposures, and one Double Dry Plate Holder.

	Price.
No. 1 4x5 Antique Oak, Knack Camera,	**$15.00**
No. 2, " Leather Covered, " "	**17.50**

MANUFACTURED BY THE SCOVILL & ADAMS CO.

FOR SALE BY PHOTOGRAPHIC MERCHANTS.

THE TRIAD CAMERAS.



When a discovery in photography is announced, it is claimed that the new article will displace everything then in use. These claims are seldom justified. There is generally found a place for the new article, if it has any value, and for the old as well.

For commercial purposes, for instance, such as the reproduction of photographs for illustration, it has been demonstrated that collodion "wet" plates are better than dry plates. For the use of the amateur, on the other hand, dry plates are much better than wet plates. Though many new supports have been tried, the sale of glass dry plates is larger now than ever before. Where only a few pictures are to be made on one day's outing it is likely that the experienced photographer will always use dry plates or cut films.

If he is going away for a summer vacation, or for a trip abroad, and expecting to to make a large number of pictures, he will procure a roll-holder loaded with continuous films. This will save him the bother of developing while he is away from home, and of changing plates; but he cannot well know what results he has secured until he has exposed the entire roll and has had it developed.

For those who want to use celluloid instead of glass plates, and are not willing to trust to good luck in the exposure of the complete roll of film, we offer with the "TRIAD" camera a *double* film holder which is very light. If the amateur carries six of these holders (loaded with twelve films) he is well supplied for one day · that is, if he is prudent and aims to get only really good pictures. At night, either in a photographic studio or in his own hotel room, the exposed films may be put away into safe receptacles, and another lot of unexposed films substituted for them.

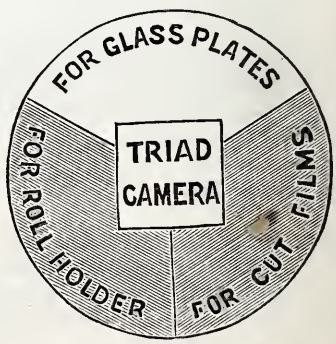
The Triad Camera is fitted with the latest improved Roll-Holder for continuous films, two double holders for glass plates, or two double film holders, if the latter are preferred.

This Camera is fitted with an Instantaneous Rapid Group Lens with easily interchangeable diaphragms —the most satisfactory detective camera lens ever made. It has a finder so constructed that the image is the same as that on the ground glass, though of course it is proportionately diminished in size. Usually the finder in a Detective Camera shows simply the image on the plate, but not its relative size and proportions. The Instantaneous Shutter in this camera is provided with a speed adjuster which works from the outside, and the focusing device and scale are conveniently near the finder. This is very important when one is trying to photograph rapidly moving objects.

For timed exposures use a tripod (easily adjusted to the camera by the plate underneath), open the door at the back, so that the image on the ground glass can be easily seen, set the shutter with the opening opposite the lens, and bring into use the felt cap which fits the opening in front of the camera. By complying with these simple requirements you have a complete camera for timed exposures.

	Price complete.	Price without Roll-Holder.
4 x 5 Triad Camera, with Roll-Holder, two Double Dry Plate Holders, or two Cut Film Holders	$35 00	$25 00
Extra 4 x 5 Triad Double Dry Plate Holders		1 25

Holders for Cut Films, same prices as above.



TRADE MARK.

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Please remember that in speed and every desirable optical quality no lenses yet constructed can rival

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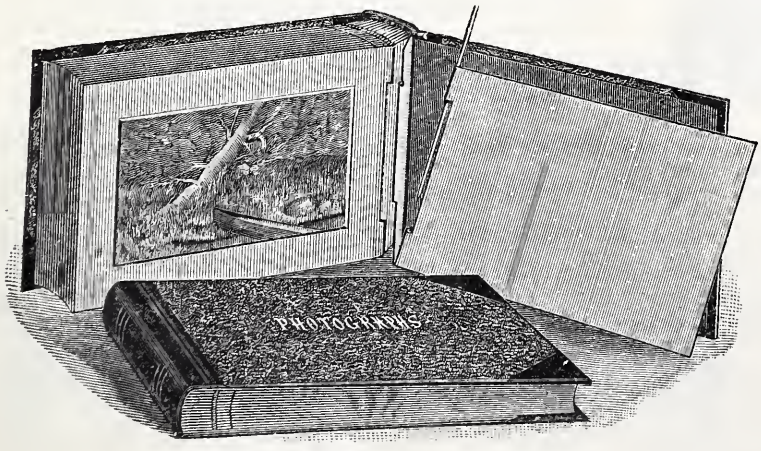
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Nos. 1, 2, 2½, 3, 3½ and 4 are handsomely finished in Morocco, half leather bound, with gilt title, and enclosed in a neat box. No. 5 is extra gold finish.

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THE SCOVILL & ADAMS COMPANY,

423 Broome Street, New York.

THE 5 x 7 HENRY CLAY
Stereoscopic Camera
FOR TRIPOD AND HAND USE.



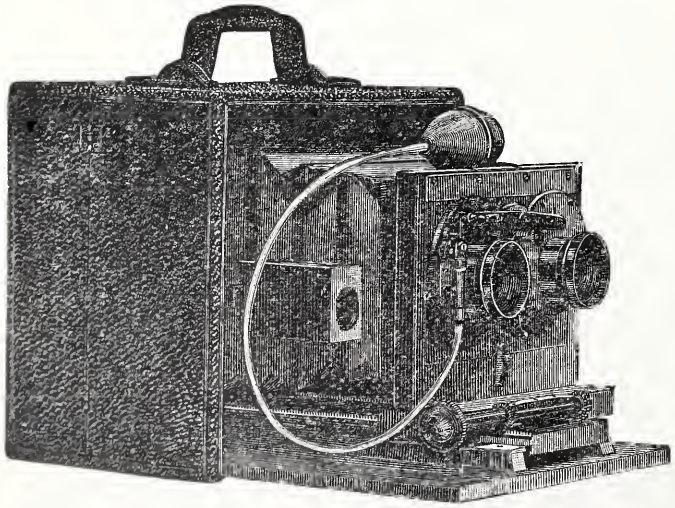
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide ; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release,** $75.00

This camera can also be made with vertical sliding and swing front. By means of the former the proportion of sky and foreground may be adjusted ; the latter permits the taking of subjects which may be either above or below the level of the camera and still preserve the lines vertical.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, and with vertical sliding and swing front,** . $80.00

A 5x7 Roll Holder for Transparent Films can be furnished with either of the above forms of this camera for $15.00 additional. This addition would make the case about two inches wider and one-quarter inch higher.

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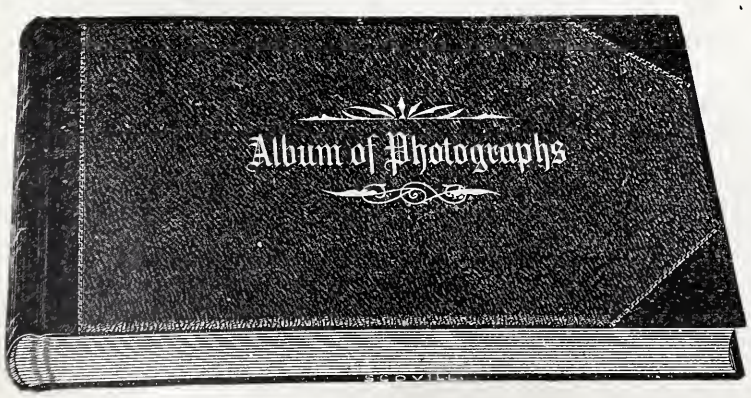
The **Triplex Shutter,** *although exactly the same as when introduced over three years ago, more than holds its own against all newcomers; and its old competitors many times improved.*

None can! None dare! stand before it in a competition, such as the one in which, in 1886, a **Prosch Shutter** *was declared* **the best Shutter in the market.**

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(LONDON, ENGLAND)

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We take great pleasure in announcing to American Photographers that henceforth we shall be enabled to supply them with JAMES SWIFT & SON'S PARAGON LENSES.

The reputation of these Lenses abroad is superior to that of any other make. They have been selected by the following named institutions because of their unequaled qualities and excellence.

The Scientific Department of the English Government in England, Calcutta and Bengal.

The Universities of Oxford and Cambridge, King's College and Edinburgh University College Schools.

Owens College, Manchester, besides the Governments of France, Germany and Italy.

The SWIFT LENSES have been awarded no less than seven gold medals, besides numerous diplomas of honor.

They are manufactured from the new ABBE-SCHOTT glass, which is undoubtedly more uniform in quality and specific gravity than the best optical flint and crown glass heretofore made ; hence the lenses are of a uniformly superior quality.

The Rapid and Portable Paragon Lenses

Are supplied with Iris Diaphragms and mounted in brass as well as aluminum; while the WIDE-ANGLE PARAGON LENSES are fitted Revolving Diaphragms.

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SOLE AGENTS IN AMERICA.

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Albumen Paper

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WHY?

Because none but the Best of the Rives Paper is selected for Albumenizing the THREE CROWN BRAND.

It is therefore free from the imperfections often to be found in other brands, which arise from imperfections in the plain paper and cannot thus be avoided.

Look out for imitations of

WATERBURY CARDBOARD.



Look out for the genuine, too, and see that you get it.

It is the Best and Cheapest.

The Photographic Appetite increases by what it feeds on. The beginner is usually content to start with a modest outfit, but as interest grows the hunger for more artistic results calls for better facilities so that the apparatus must constantly be of a more improved pattern and contain all the latest fixings, till finally the question of improvement is entirely one of the value of the lens.

The Rattler, $5.

The Advill, $20.

The Waterbury, $25.

The Bristol, $30.

The Triad, $35.

The Henry Clay, $55.

Stereoscopic, (Henry Clay) $75.

To suit this growing appetite we make a line of camera boxes unequalled for workmanship and convenient appliances. We can supply any stage of hunger and make to order to suit any whim. Any photographic question cheerfully answered. Send for our Catalogue.

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Crayon * Portraiture.

COMPLETE INSTRUCTIONS FOR MAKING

CRAYON PORTRAITS on Crayon Paper and on Platinum, SILVER and BROMIDE ENLARGEMENTS.

Also Directions for the use of TRANSPARENT LIQUID WATER COLORS, and for making FRENCH CRYSTALS.

By J. A. BARHYDT.

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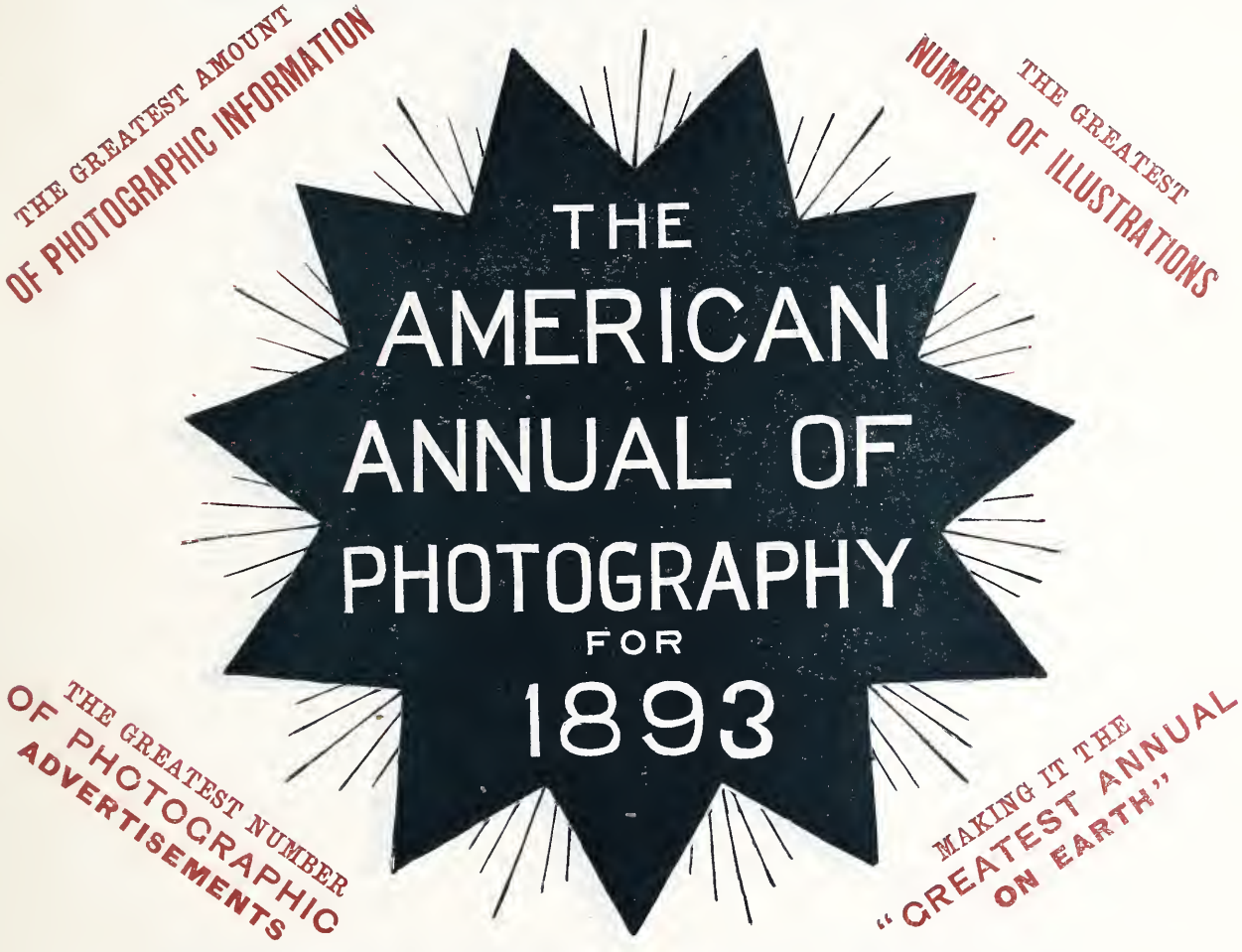
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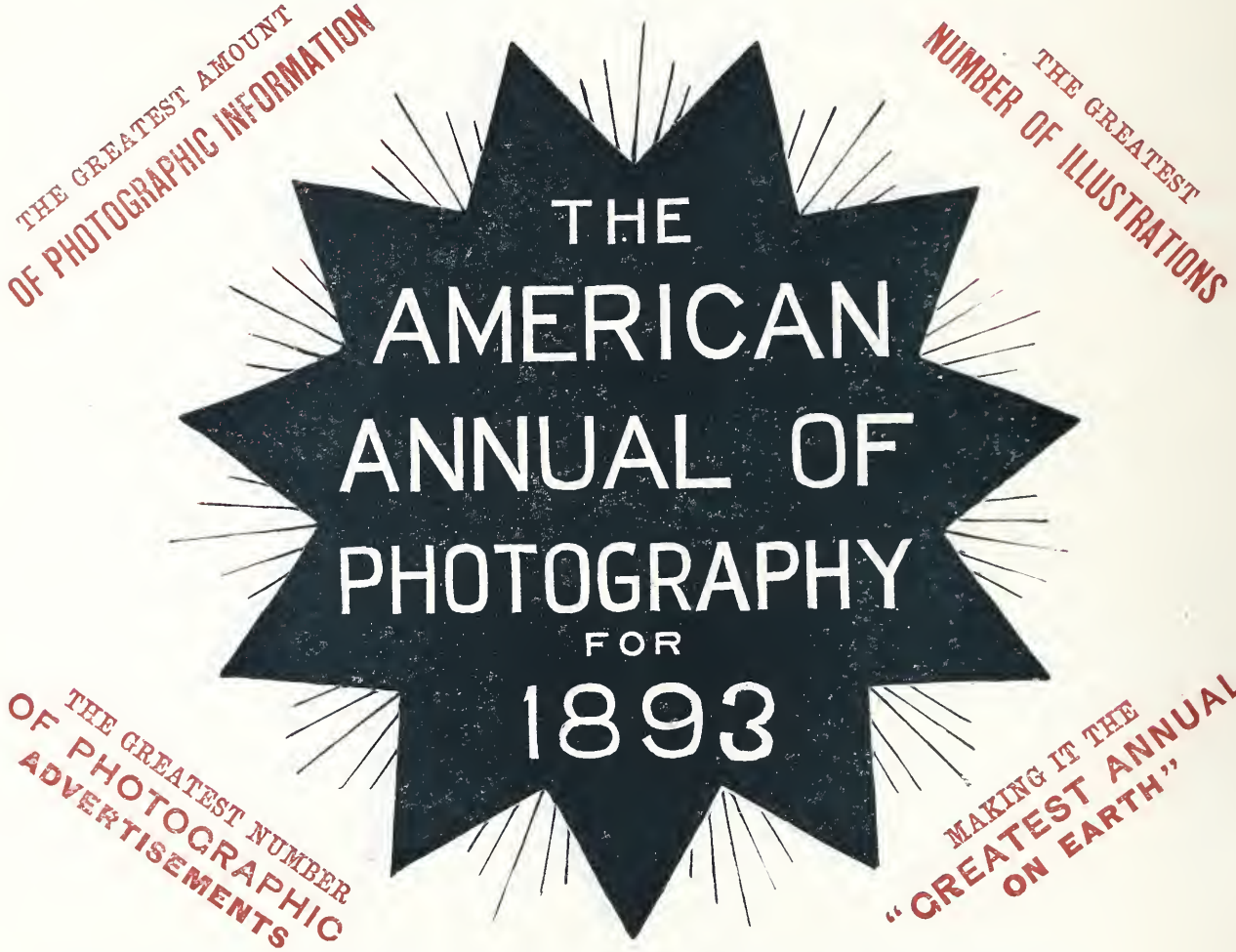
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PHOTOGRAVURE BY A. G. BUSHNELL, 111 NASSAU ST., N.Y. - FROM PHOTOGRAPH.

The Deserted Mill.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. SEPTEMBER 2, 1892. No. 572.

THE DESERTED MILL.

WE present our readers this week with a characteristic bit of American scenery, from an unknown photographer. Not only is the subject a pleasing one, well selected and well lighted, but the negative shows intelligent development, and is nechnically very superior. The photogravure reproduction is by A. G. Bushnell Lithotype Printing Co. who have never before shown a specimen of their work in THE PHOTOGRAPHIC TIMES. Our readers, however, will observe that the work is of the highest order.

ON THE TIME OF EXPOSURE.

MUCH is written, algebric formulas are given, tables published, ingenious apparatus are devised, to ascertain *a priori* what should be the time of exposure in certain circumstances. In our opinion none of these means to guide the operator is certain, and we may add, without fear of contradiction, none is really practical.

The exposure-time does not wholly depend from the actinic power of the light, but also, and principally, from the lighting of the subject to be photographed, that is, from the contrasts between the lights and the shadows. If the contrasts are strong, the exposure-time should be lengthened to obtain the details in the shadows. On the other hand if the subjects are uniformly lighted, the exposure-time should be reduced to the minimum to obtain vigor and brilliancy, etc.

Hence as a rule, without hardly one exception, the exposure-time should be sufficient to photograph the objects in the shadows, and one must depend on the developing solution compounded *ad hoc* to correct the defectuosities arising from the excess or shortening of the exposure; in a word, the developer should be adapted to the exposure-time. And this, one can only learn it by practice.

PHOTOGRAPHY ABROAD.

NEW FERROUS OXALATE DEVELOPERS.

Ferrous oxalate is still employed by many French and German photographers for the development of portraits. The two formulas following have been lately communicated to THE TIMES by a French photographer:

1.

A.—Neutral oxalate of potassium..	300
Water.....	1050
B.—Ammonio-sulphate of iron.....	370
Tartaric acid.....	3
Water.....	1050

For use, mix two volumes of A with one volume of B.

2.

A.—Neutral oxalate of potassium..	300
Water.....	1000
B.—Lactate of iron.....	80
Water.....	500
Sulphuric acid.....	traces

For use, mix in the proportion of 10 of A to 5 of B.

To develop the instantaneous exposures the plate may be immersed for an instant in water, to which one drop of a 1:10 solution of cyanide of silver has been added for every three ounces. This acts as an accelerator.

RODINAL.

According to the *Chemische Zeitung*, rodinal is a compound of:

Potassium metabisulphite.....	30 parts
Paramidophenol chlorhydrate.....	10 parts
Sodium hydrate, saturated solution.	——
Water, boiled.....	100 parts

When the metabisulphite and the chlorhydrate of paramidophenol are dissolved in the 100 parts of water, one adds gradually and by small quantities the saturated solution of caustic soda until the precipitate first formed is dissolved and the solution quite clear.

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METHOL AND GLYCINE.

Formula for Methol.

Water	100
Sodium sulphite	4
Methol	0.5
Potassium carbonate	from 2.5 to 3

Formula for Glycine.

Water	100
Sodium sulphite	3
Glycine	1

The energy of methol is comparable to that of paramidophenol. Glycine acts more slowly; it can be used without the co-operation of an alkali.

Both substances are soluble in water in all proportions.

The solution of methol keeps for a long time, being discolored only after a period of about eight days. That of glycine keeps for a longer period, becomes colored yellow, without, however, tinging the negatives.

DR. LIESEGANG describes in *Phot. Arch.* the experiments he has made to develop the images on aristotype paper. He states that he was obliged to modify the formulas given by Mr. Valenta, thus:

Pyrogallol solution, 7 : 100	2
Sodium acetate, sol. 20 : 100	6
Water	60

Or,

Paramidophenol solution 7 : 100	2
Sodium acetate, sol. 20 : 100	10
Citric acid, concentrated sol.	1
Water	50

The latter developer is preferred by the learned Doctor as better preserving the whites of the image.

A PRINTING PROCESS TO OBTAIN BLACK LINES ON A WHITE GROUND.

Prepare a solution of

Perchloride of iron	30
Citric acid	20
Water	1000

Float on this for one minute a sheet of drawing paper, dry it in the dark and print under a negative cliché in lines. This done immerse the print in a diluted solution of gelatine colored by India ink, and the coloring matter will attach itself only on the impressed parts. Wash, etc.

MAGNESIUM FLASH LIGHTS.

One gramme (15.4 grains) compounded as follows burns in one twenty-fifth of a second and its graphic power compared to that of the decimal wax candle is 900.000 :

Magnesium in powder	1
Potassium chlorate	7.5
Potassium perchlorate	7.5

One gramme of the following mixture burns in one-twentieth of one second :

Potassium chlorate	6
Magnesium dust	3
Antimony sulphide	1

One gramme of the mixture given below burns in one-fifth of one second :

Magnesium dust	37
Potassium chlorate	63

The reader should remember that these compounds are dangerous explosives and, consequently, that they should be prepared before use and not kept in stock.

The following *ink* is employed to write on photographs to produce white lines on the dark ground of the picture :

Iodide of potassium	10
Iodine	1
Gum arabic	1
Water	30

EXPERIMENTS IN COMBINED TONING AND FIXING.

OF the one hundred and twenty articles contributed to "The American Annual of Photography for 1892," no one has probably led to so many inquiries for special information and to so extensive discussion, as that on the combined toning and fixing bath described on page 87. Of the many statements made as to its efficacy, about 30 per cent. have spoken in terms of high satisfaction, while the rest confessed their inability to procure with it anything like the desired results. But the fact that a few of the many who have worked the bath have had the same results I have enjoyed, is something in its favor. To discuss its chemical composition, therefore, would be needless, were it not that the bath has proved not to work equally well under different circumstances.

While conducting the practising class of Chautauqua School of Photography during the present extremely hot summer, it was found the bath as originally prepared worked with much greater energy, and whereas during last winter it took from fifteen to twenty minutes to tone and fix thoroughly chloride of silver gelatine paper prints, toning was completed within four or five minutes. evidently too short a time to secure a perfectly fixed proof. To prolong toning, the chloride of

silver of the original formula was left out; toning proceeded much slower in the beginning, without, however, rendering the tone as agreeable as with silver, and without the whites being as brilliant and pure as formerly. E. Valenta's formula for a reliable combined toning bath (see THE PHOTOGRAPHIC TIMES, Vol. XXII., page 343) appeared quite *apropos*, and it was concluded to give it a trial. The author's opinion, that when alongside of the formation of sulphide of silver, gold is also substituted for a portion of the metallic silver of the print, the result is permanent for all practical purposes, appeared reasonable and convincing enough to give the bath a trial. The formula is as follows:

Water	500 cm.
Hyposulphite of sodium	200 gm.
Sulphocyanate ammonium	25 gm.
Nitrate of lead	10 gm.
Alum	20 gm.

The bath is diluted with an equal volume of water, and to each 200 c.m. added from 7 to 8 c.m. of a 1 per cent. solution of chloride of gold. With all that has been said in favor of the bath, it has not worked satisfactorily in my hands. In the first place, there is far too much lead in it. Bradfish & Pierce's improved chloride of silver gelatine paper of decided acid reaction tones in it to a bluish-gray color within less than four minutes. After subjecting from fifteen to twenty 5 x 8 prints to 24 ounces of the bath, it became frothy and thickish, toning proceeded still more rapidly, the gelatine film appeared to be in a state of dissolution, and after the washed print had been squeegeed upon glass, ebonite or tintype plate, it adhered tenaciously and refused to strip off under any circumstances. Reducing the quantity of lead to one-fourth, one-sixth, and one-eighth prolonged the process of toning, but all other effects remained the same. Explanation to a part of the difficulties encountered was found in a recent number of *Photographisches Archiv*, where it is stated that nitrate of lead, and still more so sulph-cyanate of ammonium, is a powerful solvent for gelatine when at a temperature of 20 deg. C. (68 deg. F.).

Experiments have proved Herr Liesegang's assertions to be perfectly correct, with the exception, perhaps, that with the presence of lead nitrate and sulpho-cyanate of ammonium gelatine dissolves at still lower temperature than stated.

With these several experiments the practicability and reliability of the Valenta bath had become more than doubtful, and a reconstruction or modification of our old bath was resolved upon. Keeping in view what Valenta had said of toning with lead and simultaneously with gold, and that slow toning only can secure perfect fixing, I compounded a bath that has so far answered all possible demands. The tones produced are agreeably warm, the whites pure, not tinged yellow, fixing appeared to have been perfect, and a reasonable permanency of the print is hoped for.

Dissolve one pound of hypo in 32 ounces of water and 3 ounces of alum in 32 ounces of water. Allow to settle, heat to 120 deg., filter and add 22 grains of nitrate of lead. To 20 ounces of this solution, add 5 grains terchloride of gold dissolved in 2 ounces of water. With 20 ounces of this solution fifty 5 x 8 Bradfich & Pierce's emulsion paper, or an equivalent of larger or smaller dimensions, can be toned and fixed to perfection. After toning this number of prints the gold is exhausted, and the bath should not be used any longer. A well-printed-out picture tones in from 12 to 15 minutes, sufficiently long to secure a thoroughly fixed print. When the tone of the picture begins to look purplish by transmitted light, no matter how the color may be in reflected, remove it at once to *running* water and continue to wash for about one hour, when the print may be dried or squeegeed. There is alum enough in the solution to harden the film, without resorting to an extra tanner, and carbonate of sodium before or after toning and fixing is not at all necessary. The finished prints have a beautiful deep purple color and the whites are perfectly pure.

The many inquiries made about toning and fixing gelatine prints in a combined bath, the repeated reports on total failures and the very miserable prints sent for inspection from many sources have induced me to write down these my latest experiences, for the readers of THE PHOTOGRAPHIC TIMES. There is only one question to be decided. Are gelatine prints toned in a combined bath reasonably permanent? An argument in favor of an affirmative answer to the question, is an exhibit of albumen prints displayed at the Chautauqua School-rooms. They were toned and fixed in a combined bath similar to the one above described, as early as in the summer of 1852, and after a lapse of forty years have preserved a generally good tone, with the whites but slightly tinged.

Charles Ehrmann.

A SUGGESTION.

"He doesn't succeed because he's a poor photographer. He ought to take to photographing barrels."

"Why?"

"There's lots of money in them."

INSPIRED BY A DAGUERREOTYPE.

THE PHOTOGRAPHIC TIMES, of August 5th, containing a beautiful likeness of Longfellow, reminds me of the poem, "Hiawatha," which was inspired by a daguerreotype.

In August, 1851, I went from Galena to St. Paul for the purpose of making views of St. Anthony's Falls, and other interesting points of Minnesota scenery. Arriving at St. Paul, I engaged the services of J. E. Whitney to assist me. Before leaving Galena I constructed a square tent, or dark-room, out of dark cambric, in which to coat and develop the plates (daguerreotypes). I had also constructed a prism, to fit over the lens, that all views would appear as in nature. An ample supply of carefully galvanized plates, buffing and coating boxes, etc., made up the outfit, all of which was contained in a large packing trunk. Arrived at St. Anthony at 7 A.M., proceeded to Nicolet Island, made several views from $\frac{1}{6}$ to 4-4 size plates, then went to the west side of the Mississippi River.

Then there was but one building where the beautiful city of Minneapolis now stands. That was a log hut, just below the Falls. Made several views showing the entire Falls and Rapids below. Proceeding thence on the west side of the river to the Falls of Minnehaha. The entire country was then wild and about the Falls the margin or banks were covered with trees, while the bluff was covered with hazel bushes. From the upper side of the Falls the river below makes a turn, so the bluff faces the Falls. In order to get an unbroken view of the Falls we had to cut down three oak trees—the stumps of which were still remaining (rotted nearly to the ground) 30 years afterwards.

I made about twenty views, all very good, showing the Falls—river above and below. The longest and hardest day's work I ever did, as we started with team from St. Paul at 3.30 A.M., and did not get back until 10 P.M., having in the mean time taken eighty-five views of the various points visited.

The next day after I got home in Galena I was called on by George Sumner, who said he had heard I was there viewing, while he was seeing the various points but one day after me. I showed him the views. He fell in love with Minnehaha, and I gave him a one-sixth size. After "Hiawatha" was published I received a copy with "the compliments of the author," much to my surprise and wonder, as I did not then know Longfellow. In reading the poem the description was so perfect I thought the poet must have sat at the Falls to have described them so accurately. George Sumner called on me in my studio in Chicago shortly after I had received the book and asked me if I had got it. I told him I did not know Longfellow and could see no reason why he should send me the book. He replied, "Do you remember giving me a daguerreotype of Minnehaha, in Galena, after your return from there? I live neighbor to Longfellow, and on my arrival home showed him the picture. He begged it from me, and took it out to the woods with him, and from the inspiration received from the picture wrote "Hiawatha," and that is the reason he sent you a copy of the book"—which I still have and prize very highly.

Alex. Hesler.

AMATEUR PHOTOGRAPHY IN AMERICA.

[Read before the Photographic Convention of the United Kingdom.]

IT will be impossible to enter fully into the question of amateur photographic work in America, and I shall not attempt it; but in considering a subject which necessarily involves comparisons between English and American work and workers, it is well, in all fairness, to have some clear idea, to start with, of how photography is pursued, and the opinion entertained of it in both countries. At present, and this is said advisedly, the English have the advantage at exhibitions of a higher general average of work, though I do not know if it is the case, as with us, that many good pictures never reach the exhibition hall.

The amateurs in England, and in Europe generally, seem to believe in what they are doing, and consider it worth while to give the work proper time and care, working hard, if need be, to insure good results, and this is half the battle. There are too many what might be called snap results with us, and the camera is still looked upon largely as a means to kill time, not worthy of respect for its own sake. We are too anxious to do things quickly, missing often thereby what only comes from patient, long-continued effort. There are instances among our workers of almost infinite patience and determination to show what photography can achieve in art, science, and general education, and such are filled with an enthusiasm which enables its possessor to think only of the end in view and bend everything to accomplish it, regardless of mental or physical fatigue. The old painters were ignorant of many of our modern canons of art, but they had a worship for the thing itself too often wanting in our utilitarian age, and the same may be said of photography. Altogether too many workers begin and end with "detective" cameras. Why? Because there is a delusion abroad in the land that they are no trouble, require no brain exertion, are always available, and the user

need not look upon his instrument as anything more than a toy. He generally expects, however, that same toy to possess all the photographic virtues of the widely differing branches of work. Beginning wiih clean, well-lighted portraiture, for instance, through the gradations of soft, atmospheric landscapes and marines, brilliant snapshots and carefully managed interiors, it is expected all these may be made in the fraction of a second, and of course with a single-view lens and cheap camera. I once received a letter, not at all an unusual one in my editorial correspondence, wherein the writer took several pages to explain what he wanted a lens to do, each requirement contradicting some other, and asked me to recommend a cheap one. My answer was that no such lens as he desired had yet been invented. The American worker, especially in small towns, is very often unable to purchase more than one lens, and yet is anxious to cover the whole photographic field. In such cases I always discourage hand cameras, as, under the best of circumstances, their results cannot fairly compete with tripod work, not merely because the latter is better in itself, but after taking the necessary trouble of setting up such a camera, one is apt to take more pains with the picture. Until one realizes all the possibilities of time exposures, he does not begin to appreciate photography at its true value. A very encouraging sign of progress with us is the increasing number of organizations devoted to camera work. Hardly a week passes that a new one is not started ; and their reports, as sent to our sanctum, show a constantly widening horizon of comprehension regarding the different fields of photographic usefulness being entered upon by workers in different professions. Physicians, painters, scientists of all kinds are utilizing the vast help photography can give them, and are realizing also, aside from that, the great and almost mysterious fascination it can exert, independently, on its own special account. A celebrated painter told me recently that he occasionally used an ordinary snap camera, not daring to attempt any of the actual work, or he should neglect his regular painting. I cannot but feel that to do camera work well, through all its countless ramifications—and what is worth doing at all is worth doing well—one must get rid of, and put behind him once for all, the idea that its limitations are as narrow as the illiberal prejudices of the past have settled upon. It is far harder to live down a prejudice than a principle, and that is just the task that lies before photography.

Experience, however limited, has taught me that, when a certain effect is gained in photographic work which at all departs from an ordinary photograph, if one attempts to help others by telling how it was done, his effort is looked upon as if he took his auditors behind the scenes at a theatre, and showed them how certain theatrical effects are produced. Probably the same thing is true this side of the Atlantic. A camerist should, above all things, never apologize for anything which will improve his results, because negative or print has been, as the unregenerate term it, "doctored." If a painter refuses to recognize the existence of an obnoxious element which would spoil his picture and simply leaves it out, why cannot the photographer use the only means at his command, and obliterate the object, whether on negative or print ? Why should one be considered genius and the other a tick? The American public, as yet, has not been able to realize that photography has risen far beyond the high-tide mark of a generation ago, indeed that it is still rising. They are, as a rule, more anxious for something new than for steady progress in the work; but attendance at recent exhibitions has proved to me that photography is winning a high place for itself, if its followers will insist on not lowering its flag to the level of a trade, but keep it where it belongs, among the arts and sciences which are elevating the general education of the world.

One great cause for the success of European workers at our exhibitions is that we do not give enough consideration to the choice of a subject. We have not the wealth of historic scenes which the old world furnishes, and landscapes, *per se*, pall on one's attention in large numbers; but we are doing something, I am proud to say, to preserve a record of the historic landmarks we own, before the so-called march of improvement destroys them, to say nothing of also keeping a record of passing events, which afford an important field for camera workers. One of the societies with which I am connected has an historical section, whose members are detailed, when any specially important event occurs, to photograph it from different standpoints, thus obtaining a large and varied collection of prints in a comparatively brief time. About a thousand negatives were thus obtained at the centennial celebration of Washington's inauguration as President, which will eventually be of great value. This society's badge entitles the holder to entrance within the police lines at fires, parades, etc., and to work in the city parks. Both the large New York societies also give their members special privileges. This idea as to historical work is spreading among our societies with excellent results.

The Chicago workers ought to take up seriously the matter of photograghing at the Exposition, and a general protest is likely to be made against what appears to be the somewhat arbitrary ruling of the authorities. Permission should not be indiscriminately given, but under restrictions.

I have not been able to procure statistics as to the number of clubs in our country, but have visited many of the leading ones from New York to California, finding that, as in the case of the Boston Club, with its fine studio and meeting-room, each has some special advantage, but none offer better working facilities than the New York and Philadelphia societies. The New York Camera Club talks of a special club-house, with separate studios, dark-rooms, etc. A desire is spreading among the clubs for more practical instruction than is given in papers or discussions, and nowhere is this better shown than in some of the smaller clubs. The idea, so general here, of camera trips during the summer is also gaining in favor with us. Women are admitted to membership in the greater number of our clubs, and in some of those who still hold out in the good old way their work is hung at exhibitions, their lantern slides shown on the screen, and I have spoken before several clubs which do not as yet admit women members, agreeing, perhaps with a gentleman friend of mine in one such club, that a photographic society should be considered merely as a sort of masculine boudoir. Women workers are increasing rapidly among us, and it is only a question of time when they will be generally recognized as mentally fitted to improve the educational opportunities afforded by a club. Working by one's self encourages a narrow, prejudiced manner of judging one's methods and results, and women as well as men need to have their rough edges taken off by the sharp attrition of sharp criticism and discussion. We have in America what we call smoking concerts, which women, even if active members, do not attend, and it is only occasionally that a pipe or cigar is seen in the ordinary meetings, never at general entertainments. In the dark-rooms the stall system is largely used as being more private, but the printing and slide work is done in a large room. Quite a number of our leading workers have their own developing rooms, and even portrait studios. In my own case, after making a portrait exposure and developing the negative, I take it to a professional friend of mine, who retouches when necessary, and then, unless in special instances, the sitter orders from and pays him for what prints are desired, the negative, of course, being held by me. I have not time to make so many prints, and sitters would not realize the extra labor involved, besides valuing the pictures more if obliged to pay something for them.

In landscape work the English have an advantage, rather than disadvantage, in their unduly blamed climate, far better atmospheric effects being gained in our clearer air; but they, as a rule, use heavier cameras than Americans. We rarely use an imported one a great while before beginning to make improvements in it, and, first of all, making it lighter, carrying the latter point even to excess. English cameras, unless of specially seasoned wood, are apt to warp in our drier climate, and I do not believe in, and certainly never saw, a single American worker using a wooden slide in his plate-holder.

Most of our finest cameras are made to have the ground-glass keep its position, even when the holder is slipped into place, and the tripod if made distinct from the camera, which latter I am not sure is an advantage.

Practical demonstrations and clear plain talks seem to be most enjoyed at our society meetings, and when papers are read it is a rare case when the lecturer is not afterwards called upon by different hearers to explain various points still further.

Dry-plates are most generally used, though a few cling persistently to the wet process. One amateur I know of who coats all his lantern plates, and another, in preparing his, takes into careful consideration the special purpose for which they are to be used.

Only a few of our manufacturers make slide plates, and I consider it as somewhat unwise to make them more rapid than the English ones, which actual demonstration has proved to me is the case. It is claimed that slide-making is losing in interest, but such entertainments are always well attended, though the audiences seem to pay more attention to the subject of the slide than to its technical or artistic merit. We trust that European workers will in time see the advantages of our size negatives and slide plates, and that there is no actual need of using such very heavy cover glass. International exchange of slides is an idea worthy of cultivation, and is of value specially in encouraging all to do their best. Several of our amateurs have experimented in camera-making, and of shutter attachments there is no end. Our national fondness for haste has found a new vent in a kind of craze for instantaneous (I use the word under correction) pictures of racing, athletics, scientific experiments, etc.; but, on the other hand, that same tendency leads us to constantly invent practical, labor-saving appliances, wherein I claim we hold high rank, and many of our best workers have

either personally made many such, or suggested them to some manufacturer, while one amateur has invented a shutter which allows several exposures per second. Orthochromatic work (or, I should rather say, color-sensitive) is receiving more attention than formerly as the plates improve. They were supposed to be very difficult to develop, but at some of our recent exhibitions remarkable results from them have been shown, especially as regards flowers and delicately tinted drapery. As is well known, Mr. Ives is the only one among us who has succeeded in demonstrating what is hoped for from color photography, but even yet he has a difficult task before him. Ordinarily, we depend for our finest lenses on foreign makers, but there has been a new one placed recently on our market by a New York amateur which, in the way of reducing harsh contrasts and allowing the shadows and half-tones to appear as in the gradations of nature, practically enters the field of orthochromatic work. It has a violet color attachment, which can be screwed into the place of the rear combination of the maker's rapid rectilinear, wide-angle, or portrait lenses. It slightly increases the time of exposure, and the eye is at first disturbed by the use of the colored instead of the colorless lenses, but the results are remarkable, especially with portraits. The makers are also busy with a tele-photo lens, similar in some ways to Dallmeyer's and Miethe's.

There is a reluctance with us in England, except among those amateurs who have been given over as incurable, to carry a size camera which will permit the picture to properly represent the view photographed. Even when intended for use in the lantern the picture-takers too often prefer contact-slides, simply, it would seem, because their physical strength is really or apparently inadequate to the carrying an 8 x 10 or 5 x 7 camera for the negatives, to say nothing of the extra exertion of reduction ; but, as the French proverb says, "that which costs nothing is worth nothing." With regard to developers, many of us like hydroquinone, more still like it mixed with eikonogen, and others eikonogen alone, though I believe the majority, for regular work, prefer pyro and soda, as ammonia does not seem to agree with our plates. It would seem a good plan to test each new developer as it appears, for then, and only then, can the worker be really justified in making a choice. A number of our workers are expert chemists, and always prepare their own developers, not pinning their faith on ten per cent. or any other-made solutions. As one of our writers has said, "A fool or a folly is no better for being an old fool or an old folly," and, if any method of work or modification of it suits our purpose, we do not wait until it is overgrown by the moss of tradition before recording our acceptance. Film rolls are much used in hand cameras, though magazines are preferred by those who keep to glass plates, and their number is increasing. Albumen and other glossy surface prints have been most generally used, though they are being superseded with our amateurs by the various matt-surface papers, especially bromide and platinum.

The question of exhibitions is not yet considered, as it should be, a valuable factor in photographic education, and we do not have enough of them. I cannot but wonder sometimes that judges are found willing to face the almost certain blame attaching to them, no matter how conscientious they may be. They are fallible—very much so—like most of us, and naturally praise what seems good to them, whether the general verdict agrees with theirs or not. The true benefit of an exhibition is gained when one ascertains not merely wherein his work excels, but wherein it is deficient. The general impression is growing that boards of judges should not be formed exclusively of either photographers or artists, as each is apt to be influenced by the prejudices of his own special education.

When will it be understood, both sides of the Atlantic, that photography in its dual nature of art and science is not necessarily a house divided against itself, and why is it not possible, as in the story of the gold and silver shield, to look at the question from both sides? Americans have not shown their full strength at European exhibitions, largely because notices of such rarely reach us in time for us to prepare and send any special work, and some international arrangement ought to be made, certainly on our side, to obviate the annoying delay in the custom-house. But I do not propose to discuss the tariff question.

Photographic literature should not be entirely passed over, and its importance is shown not alone in journals especially devoted to its intesests, but by the way in which it is leavening our whole American literature. The daily press in many cases publish a photographic column, constant references are made to the subject, and many of our magazines give considerable space to articles on the work, or illustrate their pages from the results of the camera. Even the way in which the newspaper reporter attempts to be humorous on the subject shows a general interest in it. We have several magazines devoted to photography, professional and amateur, and they have a wide circulation. Our readers demand a great deal, being very

particular also how it is presented, and those who undertake to furnish food for the average photographic brain have by no means an easy task.

It is often asked me if photography is not dying out, but I can most positively declare that with us it is most constantly growing. There are almost daily inquiries, of every one who is supposed to be an authority, as to instruments and methods of work, and it rests with our great army of amateurs to make their own place in the world.

Believe in what you are doing, and people will believe in you. The work should be followed not merely for personal credit, but for the work's sake and its value as a mental and moral education. I am glad that America has several representatives at this convention, feeling it will do much to strengthen the bond of comradeship between kindred bodies of workers. There should be only a sense of generous emulation on each side, and the tie of relationship not be weakened, though the ocean lie between us, for each can and should gain by mutual help.

As our great poet Lowell says :

"For mankind are one in spirit, and an impulse bears along.
Round the earth's electric circle, the swift flash of right or wrong.
Whether conscious or unconscious, yet Humanity's vast frame,
Through its ocean-sundered fibres, feels the gush of joy or shame ;
In the gain or loss of one race all the rest have equal claim."

Catharine Weed Barnes.

INDIVIDUALITY IN PHOTOGRAPHY.

[Read before the Photographic Convention of the United Kingdom.]

IN a recent number of *Blackwood's Magazine* an ingenious writer tries to show that the one thing more than another that now represents primitive man is the baby, and that the nineteenth century British baby differs very little from the savage child of, let us say, a couple of hundred thousand years ago, for the baby is nearly a quadruped, and is a reckless creature devoid of conscience. It is, perhaps, a knowledge of the fact that babies are all alike that enables photographers, as it is libellously said, to make the negative of one of the species satisfy the yearnings of many mothers. Now, photography is certainly somewhat like this view of the human race in the respect that its immature productions are all alike, and it is not until they grow up and acquire a conscience or soul that they differentiate and show individuality.

Of the immature there is no end, but a wise and invariable provision of nature checks over-production. Nature is always wise, but has no mercy :

"So careful of the type she seems,
So careless of the single life ;"

and, seeing that the world would be overwhelmed by immature photographs, she sent beneficent fading to destroy them (always, as in other departments of nature, "so careful of the type," sparing a few) until the art grew old enough to possess a soul or conscience, and then permanent methods were given to us ; and even now we sometimes feel inclined to paraphrase the wisdom of Mr. Whistler, and say modern photographs do not fade, and therein lies their deep damnation. This wonderful preservation of a few in all their pristine freshness is suggestive of a special providence, for according to the scientists, who are, of course, always right, like methods should produce like results, and not one of the old prints should have escaped.

Now, evidence of soul or conscience in a picture is art. Yet there are those who will not recognize that we have a soul, but, like Mr. Gilbert's mechanical figures in the *Mountebanks*, are only stuffed full of badly made machinery that sometimes runs down, and always moves with a jerk ; and I am not sure we are not suspected of trying to adapt the "put a penny in the slot" business to the fine arts.

It is a favorite reproach with the opponents of photography as a picture-maker that its results are all alike ; it is one of the triumphant proofs of those who will not admit that photography is an art that the unthinking machine makes all its products to the same pattern ; that there is no intrinsic evidence in any photograph of its maker. They will no more believe the plainest evidence to the contrary than those of old would believe the angels. They say we are mechanical, and it is of no use pointing out that this wild assertion is obviously untrue, we hear it over and over again, sometimes from one who knows that it is not true, at others from those who are simply ignorant and cannot learn. These are to be pitied. Then, there are those whose purpose it serves to deny; and, worst of all, those who have tried, and altered their faith, because they failed, those who, as the poet says, "fade away, and dying damn." To the credit of photographers there have been very few of these; however, we have lately had an exhibition of one of them. A most enthusiastic defender of photography as an art of a few years ago, but who, perhaps, failed to prove it in his works, was politely asked to contribute to a recent exhibition, and is reported to have replied as follows—it is a

lesson on the mutability of things to compare this letter with his former opinions: "I am fully persuaded that photography is not art nor can be, and to encourage exhibitions is to lead a lot of vain people to waste their time in the practice of a useless and vain pursuit."

It has no effect with the prejudiced critic to point out, that if different minds using the same machines produced like results invariably, as machines are expected to do, any one of them who understood the machine ought to be able to turn out a series of masterpieces equal to the best that have ever been produced, always providing, of course, that one machine was as good, and as well brass-bound and French-polished as the other. Yet they continue to say—and this is one of the latest utterances of science: "The picture painted by the artist is a transcript of his own emotions, but a photograph is not a reflex of human emotions at all—unless, indeed, accidentally so—but is a direct reproduction of nature, and only through science the offspring of man." We must be grateful to the writer for allowing us the accident.

I am quite ready to confess that up to a certain point, and in the hands of the ninety per cent. of the followers of the art who are not artists, the photograph is in the process; but with the others the picture is in the man (as in painting, only in a less degree, and as far as the materials will allow). The process takes a very subordinate place, and is dominated by the taste, thought, and feeling of the artist, when an artist uses it with what may be fairly called emotional results. Who has not laughed with many of Rejlander's characteristic heads, or wept—yes, I have seen even that emotional result produced by a photograph (which was not an accident), and it is an important part of my argument that all these emotions arose first in the mind of the photographer, and would never have been originated by the same models in the hands of another photographer.

Of all the attempts made to prove that photography was not an art, that which would have most force, if proved, would be that it showed no evidence of individuality; but, on the other hand, if the possession of that quality were proved, it would be one of the strongest arguments in favor of the admission of photgraphy to the brotherhood of art, for individuality, in its products, necessarily implies the operation of a directing mind behind the "soulless camera."

The latest of the many attempts to define the meaning of the word "art" is a very remarkable one. It is said to be, "The apparent disproportion between the means employed and the end obtained." And, as an illustration, the following explanation is given, at which, I think, many a practical photographer will smile:

"Admit, for argument's sake, that a photograph reproduces with a fidelity far beyond anything that the hand of man can attain to, it must still be allowed that the means used to attain this end are infinitely more complicated than the few hairs tied to a stick which the artist uses. Indeed, it might be argued that, if *art* is the apparent disproportion between means and end, photography is not art at all, but science. There is no art on the part of the lens when it produces its images; it does so strictly in accordance with natural laws. The developer acts as thoughtlessly as any other chemical experiment, and these are the chief factors in every photograph. It is true, you have one small part to play—you must have the *art* of exposing properly; but even here a few shillings will purchase for you a machine to do even this. I do not admit art in development. Art in development is only called in when the exposure has been made without art, and, as I have already allowed art in exposure, I cannot allow it here again. With such an infinitesimal part of the picture the outcome of art, is it honest to call a photograph a work of art?" This curious example of scientific knowledge of art is by Dr. J. K. Tulloch, of Dundee, and was written in the present century. Are we to understand from this singular piece of reasoning that painting is an art because the painter uses "a few hairs tied to a stick?" and does the writer suppose that we claim photography as an art because of its fidelity—that heritage of the youngest amateur?

Some writers get confused between degree and kind. In an article in the *Magazine of Art*, a certain writer, who was once a photographer, endeavors to show that photography cannot become art, because its individuality is limited. That it is more limited than painting has always been admitted—we cannot get so far away from the truth as is the painter's privilege—but it is also admitted that all methods of art are more or less limited, and the amount of limitation is only a matter of degree, not of kind. The limitations add to the difficulty, but do not alter the status.

Let us run back a little and see if we can find a few workers whose results are totally different from those of their contemporaries, and this invariably. One of the earliest photographers to show genuine art feeling in his work was Rejlander. He died sixteen or seventeen years ago; yet, among many thousands of photographs, it does not require much experience to recognize a Rejlander. There was nothing in the manipulation to distinguish

them, except, perhaps, carelessness. It was the mind of the man that was visible; you recognize the man beyond the process. There are still those living who can say, on looking at a collection of old photographs, This is a Francis Bedford, a Dr. Diamond, a Fenton, a Delamotte, a Le Gray or Silvy, a Wingfield or a Mrs Cameron, certainly quite as accurately as an expert in painting would say, This is a Raphael, or Titian, or a Correggio. Then what becomes of the machine argument?

I will now endeavor to put it another way. Photographs, as I have endeavored to prove, show the mind of the producer—when he has a mind to show—and given two equally gifted photographers, as far as equality can be measured, the one could not produce even a colorable imitation of the work of the other. Neither could dismiss his individuality, let him try how he may. Take two representative men, Rejlander and F. Bedford—neither of these accomplished photographers could have imitated the other. They had both original minds and followed the bent of their genius, and their hands, as well as brains, showed in every picture.

Among the workers of the present day I could point to dozens of well-known instances, but one or two must suffice. No man's work has been more imitated than that of Mr. Gale. In every exhibition he is imitated in size, style, framing, and signature, yet an expert can decisively say of two pictures, This is the Gale, and this the imitation; he can even distinguish between the imitators, and say, This is a ——, and this a ——.

Then, in a very different style, there are the works of our much-respected President, than whom there is no one I would prefer to see occupy the honorable position which defective health compelled me to decline. Perhaps I am not a fit and proper judge of his pictures, but, without altering my opinion of what a photograph should be, I must confess that some of them have captured my admiration for their beauty and respect for other ways than my own when in good hands. Now, some have endeavored to imitate Mr. Davison, and some have renounced photography in despair, because they could only reach the eccentricity without touching the excellence. It is easy to put the image out of focus, but not so easy to make a picture by that means, and Mr. Davison makes pictures. It is easy to copy peculiarities, but not so easy to imitate valuable essentials.

While on the subject of our President, may I be permitted to add—for he is now in a public position and open to our shots—that, however straitened his views of the practice of photography as an art may have been at one time, his opinions have constitutionally broadened down, until now the keynote of his teaching is liberty for all.

We now come to another proof of individuality. It used to be the practice to insist on anonymity at exhibitions until after the judges had done their work; but this was given up when it became apparent that the judges usually recognized the work of the old hands, and the only nameless ones were new exhibitors. In America—at least, at the Convention Exhibition—the farce of the anonymous is still carried to such an extent that nobody seems to know, officially or otherwise, who the pictures are by until it is too late to be of any use to the exhibitors; and newspaper criticism has to be published without names. For, however the photographs may proclaim their authors, it seems to be etiquette to pretend not to know.

The difference between the works of some of our best photographers and those of the moderately successful can scarcely be due to a scientific cause, except, indeed, to a reversal of the generally received idea; for I think, if the truth were known, it would be found that the producers of the indifferent pictures had much more scientific knowledge than hose who produce the most artistic pictures. I am acquainted with a great many of our photographers, but I do not know one of those to whom we are accustomed to look for the chief ornaments of our exhibitions who have any elaborate scientific knowledge. Indeed, their technical methods are so very simple as to seem quite elementary. They usually take a plate to the make of which they are accustomed, a simple pyro and ammonia developer, a handful of hypo, and a jug of water, and use them properly; and that is all. They do not bring science to bear even on the exposure, at the expense of "a few shillings." They get on without an actinometer. They feel from experience when their plate has had enough, and an actinometer, however perfect, would only confuse them. But, as they endeavor to put taste, thought, and feeling into their pictures, their works necessarily differ from those of the scientist, and the essence of their art is individuality.

My last word must be a word of caution. Be original, be unique if you can, but not out of harmony. Individuality goes wrong when it is out of harmony with its surroundings. Eccentricity is very easy, but it does not last. It is open to the meanest capacity, and is often assumed by it; but genius, to be useful, should consist of individuality, backed up by suitability to its environments.

H. P. Robinson.

GLEANINGS FROM OLD BOOKS.

(*Continued from page* 443 *and concluded*).

"Another possibility is the vaporization of the metal, and its deposition on the receiving surface. It is now known that nickel, iron, and other metals volatilize under circumstances which were altogether unthought of a few years ago. The metals mentioned, and also others, are now known to unite with carbon monoxide at low temperatures and to form volatile compounds which are readily decomposed. Indeed, the metal nickel can be virtually distilled in carbon monoxide, and the condensed nickel can be deposited as a solid or plating as it condenses. Although it may, perhaps, be unreasonable to assume the existence of sufficient carbon monoxide in the air to form metallic carboxides, it is possible enough that other volatile compounds of the heavy metals may be formed with carbon derivatives; indeed, a familiar fact somewhat indicating in this direction is the peculiar smell produced when copper or brass is handled.

"The final view is one touched on by Professor Sylvanus Thompson at the meeting to which we have referred. For all we know, many objects may be glowing with electrical oscillation, and, indeed, there may be a world of light and color, opacity and transparency, totally closed to our senses—a world of force and energy making such communications between persons and things as are altogether beyond our conception. Indeed, we must not lose sight of the fact that the wide range of oscillatory force, of which light is a small section, is, for the greater part, closed to human senses and perception."

THE WATERHOUSE DIAPHRAGM.

Looking over the *Journal of the Photographic Society* for 1858 a few days ago, writes the editor of *Photographic Work*, we came across the original description of the Waterhouse diaphragm. Mr. John Waterhouse, of Halifax, writes and speaks of the advantage of central diaphragms for the portrait lens, and the convenience of using the full aperture for focusing. He then gives a sketch of the arrangement, and finishes with an apology for giving a detailed description of so simple a contrivance, and says he should not have ventured to send the description had he not been urged to do so by several photographic friends.

UPS AND DOWNS.

"A good photographic miniature costs money."

"No doubt of it; as the picture goes down, the price goes up."

Notes and News.

The late firm of Tucker & Butts has been dissolved, and the business in all its branches will be carried on by David Tucker, in the Tucker Building, No. 37 & 39 Court Street, Buffalo, N. Y.

The United Retoucher's Organization, Order No. 1, has been organized in St. Louis, Mo., with a good membership. The object of the Association, as Mr. R. W. Drew, Secretary of the Order, writes, is to "elevate the photographic business, to secure help for those who need it, and to find positions for the members who are out of employment." This, certainly, is a worthy motive, and it is to be hoped the Association will meet with the highest success.

Niagara Falls an Electrical Power.—Mr. George Forbes, the electrical engineer, has gone from London to inspect the Canadian site of the river relative to the construction of a gigantic tunnel in connection with a scheme for the production of electrical power and its transmission from the cataract to large manufacturing centres. The company intrusted with the work is a Canadian one, holding a charter from the Dominion Government.—*Science and Art.*

DIRECTIONS FOR USING SOLIO PAPER.

Print in direct sunlight, covering thin negatives with tissue paper, allowing the print to get a little darker tint than the finished print should be. Place print without previous washing into the following:

Combined Toning and Fixing Bath.

To tone 30 cabinets take

Stock solution A	8 ounces
Stock solution B	1 ounce

Stock Solution.

A.—Hyposulphite of soda	8 ounces
Alum (common)	6 ounces
Water	80 ounces

When dissolved add 2 ounces borax dissolved in 8 ounces hot water. Let stand over night and decant clear liquid.

B.—Chloride of gold	15 grains
Acetate of lead (sugar of lead)	64 grains
Water	8 ounces

Tone to desired color and immerse prints for five minutes in following salt solution to stop the toning:

Salt	ounces
Water	32 ounces

Wash 1 hour in running water or in 16 changes of cold water, when prints may be mounted same as albumen prints.

If prints are not to be mounted they should be squeegeed on ferrotype plates to give a glacé, or ground-glass to give a mat-finish.

All solutions should be used as cold as possible.

In warm weather prints should not stand over night before mounting.

Mounted prints must be thoroughly dry before burnishing.

"I like the paper very much.

"EDITH ELIOT, New Bedford, Mass."

The Editorial Table.

We have received from the Eastman Company some excellent specimens of photographic work on their new Solio paper.

The collection includes portraits, instantaneous views, and landscapes, and all are of a uniform quality of excellence, both as to tone, detail in the shadows, and clear whites. We think this paper will undoubtedly prove itself a great boon to photographers, both professional and amateur.

We give the simple directions for working it in another column.

"Our Little Men and Women," for September, is as bright as a "new dollar." The frontispiece is a picture and a poem in itself, and the closing illustration is an apt companion. Many of its stories and poems will remind the little readers that vacation is over, and others will help them better to enjoy their play time and study time. "Our Little Men and Women" is a magazine made for the younger boys and girls, by writers who best know the boys and girls' needs, and it stands without a rival.

Price, $1.00 a year; 10 cents a number. D. Lothrop Co., Publishers, Boston.

Babyland, for September, is a remarkably clever number. Its pictures are pretty, its jingles are gay, and the stories are just such stories as Babyland makes for the Babies. "A Rhyme for Baby's Fingers" is a dainty bit of verse meant to captivate Mamma and charm Baby. What would the little folks do without Babyland!

Price, 50 cents a year; 5 cents a number. D. Lathrop Co., Publishers, Boston.

ARS PHOTOGRAPHICA.

THE following verses on the photographic art are interesting from the fact that they were written by the Pope for a souvenir album prepared by H. R. H., the Infanta of Spain. We reprint the verses from the August number of the *Review of Reviews*:

Expressa solis spiculo
Nitens imago, quam bene
Frontis decus, vim luminum
Refers, et oris gratiam.

O mira virtus ingeni,
Novumque monstrum! Imaginem
Naturæ Apelles æmulus
Non pulchriorem pingeret.

—LEO F. F. XIII.

O shining image clear,
Expressed in sunrays bright,
How wondrously before us here
Thou bring'st the power of light.

O marvel of man's thought!
New portent! With so fair a grace
Even Apelles' brush could not
Present us Nature's face.

TIME'S REVENGES.

"The surgeon, you know is a handsome man, but the photographer made such a poor picture of him, the doctor felt all cut up about it. But he had his revenge."

"How?"

"Soon after the photographer fell and fractured his skull, and, I tell you, when the surgeon got through with him the artist felt pretty well cut up himself!"

Queries and Answers.

327 L. J. H.—How are pictures made on watch faces, etc.? Are they ceramics and how made before burning;?

327 *Answer.*—Photographs on watch dials are most generally made by coating them with chloride of silver collodion emulsion, printing-out, toning, and fixing.

The so-called transferrotype method answers very well, and is probably the easiest to obtain satisfactory results.

Burnt-in pictures are not so common. For directions how to make them we refer you to the serial article entitled "Industrial Photography," by P. C. Duchochois. See PHOTOGRAPHIC TIMES, Vol. XXII.

328 H. S H.—Will you please answer the following query in the next issue of THE PHOTOGRAPHIC TIMES? What is a good method to test and compare the sensitiveness of different makes of dry-plates?

328 *Answer.*—We cannot give you the desired information. Different plate-makers use different methods for determining sensitiveness; some of them do so by photometrical means, others are said to make the sensitiveness of the wet-collodion plate a standard, and others again use the Warnerke sensitometer, but the majority of them employ means of their own, the nature of which we are not acquainted with. We advise you to apply to every individual manufacturer of plates.

329 QUITS has found in some cases the negative picture, when being developed, and before developing is completed, assumes positive character; that is, those portions of the plate having been most acted upon by light refuse to build up intensity, and show after fixation but very little negative effect, while other parts of the plate are quite normal.

329 *Answer.*—This phenomenon is known as a reversal of the image, and is due to over-exposure or solarization. The adhesion of bromides will not help when such occurs; use instead of it a few drops of a saturated solution of boric acid or of an alkaline citrate.

330 W. J. GUILD.—What is the best method of developing for a travelling tent man that can't get ice? Is there any dry-plate made that can be developed with developer at the temperature of 80 deg. Fahr. and get good effects? If so, what plate? No good effects can be got out of any plate that I know of at a higher temperature than 50 deg. Fahr., yet I am compelled to use water at 62 deg. to 70 deg. in an atmosphere at 90 deg. Fahr. The question is: How to obtain good results under these circumstances?

330 *Answer.*—Use Harvard plates, paramidophenol developer, and the acid fixing bath, and if the plates should frill in the developer, add to every two ounces of it a teaspoonful of tannin solution.

Dry the plates in a strong draft of air.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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" " three month's trial 50

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All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

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Sixth.—Because it is the best edited and best printed photographic magazine published anywhere in the world.

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Thirteenth.—Because its rates are lower than any photographic publication, considering the size of page and the extent of circulation.

Fourteenth.—Because your advertisement will receive the best of treatment on the part of the compositor, and will be advantageously placed in its pages.

Fifteenth.—Because all its advertisers are endorsed by the publishers as being worthy of patronage.

Sixteenth.—Because no advertisement in any way objectionable is admitted to its pages.

Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

Business Notices.

WANTED.—August 28, 1891, issue of THE PHOTOGRAPHIC TIMES by Dr. A. C. Mercer, 324 Montgomery Street, Syracuse, N. Y. Will pay 25 cents for it.

FOR SALE.—4 x 5 Gennelli Camera, for making four minette pictures on a plate. Good condition. Price $12. Address G. B., care THE PHOTOGRAPHIC TIMES.

WHO HAS BEST BARGAIN in second-hand 8 x 10 Lens for me? Portrait or View. First-class make only. Write early. Low prices.
FRANK E. HEGE, Salem, N. C.

FOR SALE.—One of the oldest and best equipped galleries in the city of Denver, Col.; centrally located, and good prices. Newly refitted up to 18 x 22. Good reasons for selling. Correspondence solicited. Address "PHOTOGRAPHER," care PHOTOGRAPHIC TIMES.

FOR SALE.—A new 4½ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
Care THE PHOTOGRAPHIC TIMES Office.

RAPID RECTILINEAR LENSES AT COST.—4 x 5, $5; 5x7, $12; 5x8, $7; 6½x8½, $8; 8x10, $12; 10x12, $18; 11x14, $24. Write for price list.
W. P. BUCHANAN, Importer, Philadelphia.

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C. M. BROCKWAY, 33 Worth St., New York.

GALLERY FOR SALE.—In Lansing, Mich.; reason for selling, the sudden death of the proprietor, Mr. A. M. Cheney. Business good, and the opening a rare chance for some one. Address for particulars
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356 Central Ave., Dover, N. H.

STOLEN.—On the night, sometime, from August 15 to 16, the following articles were stolen from the Weinig gallery, Third Avenue, near 114th Street, one 11 x 14 Scovill View Camera and three double plate-holders (formerly the property of Emil Wagner, of Brooklyn); one Schnitzer & Co. Rectiscope Lens No. 4, with Rotary Stop; one Scovill Tripod. Should any one hear of these articles, or should they be offered for sale, it is requested that they report to the Editor of THE PHOTOGRAPHIC TIMES, or direct to Mr. Weinig.

A BARGAIN.—$425 cash will buy my fully equipped gallery; no opposition; good reputation, and portable branch. Buildings and equipments valued at $750; cause, poor health. Address
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It will pay you to seed for it before ordering any goods in the photo line.
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The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47..... 25
Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English), Vols. I. and II. (except No. 18), 1890, 1891.

A few *very* odd numbers of Photographic Notes, Daguerreian Journal, Photographic and Fine Art Journal, Magic Lantern Journal, Photographic Herald, etc.

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An expert operator of long practical experience, fully efficient in all branches, speaking several languages, wants employment either on salary or percentage. Address J. Basano, Puritan Hotel, 183 Bowery, New York.

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A first-class operator in our Lantern-Slide department. Wet plate. J. B. Colt & Co., 16 Beekman St., N. Y.

Partner wanted, with or without capital; will pay salary if preferred; must be A No. 1 operator with a successful experience in large work, and a fine retoucher. Address with samples and terms to A. E. Hotchkiss, Norwich, N. Y.

WANTED.—Practical View Photographer; an ambitious young man of good address who wants to travel. You do? We want an untiring, accurate, self-dependent worker, who can always do something more useful than lay around and wait. He should be somewhat of a salesman, an artist, an enthusiast with the camera. He should be willing to prove his fitness and to commence at a moderate salary, all travelling expenses being paid by the firm. We do not want applications without business references, or of men who answer only the one requirement of wanting a job. We desire to find the right man and to treat him right. Write C. H. R., Post Office, Brooklyn, N. Y.

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A photographer, speaking French, German, Spanish and a little English, wishes a situation in New York City or in Brooklyn; he is a first-class retoucher, knows the work of the dark-room, and may be a good help as a positionist. Address, to F. S., 126 West 11th Street, New York.

As general assistant in studio. Address Charles C Moore, Du Bois, Clearf. Co., Pa.

A No. 1 retoucher and general assistant will be open for an engagement by first of next month. Can finish Bromides. Address W. E. M., Retoucher, 602 Penn St., Reading, Pa.

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3¼x4¼	$18 00	5 x8	$22 50
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Para-amidophenol (pure)	100 grains
Sodium sulphite (crystals)	3 ounces
Potassium carbonate	1½ ounces
Water	32 ounces

FOR USE.—Take 1 ounce of the above solution and from 2 to 4 ounces of water, according to the length of exposure.

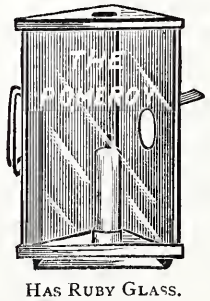
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1st.—Because it has perfect ventilation.

2d.—Because being triangular in form it can be folded without complication, and occupies a space not greater than Webster's Pocket Dictionary, 6½ x 4¼ inches.

3d.—Because it has a socket to take candles, which may be procured in any part of the country; the annoyance of loading one's self with a supply is avoided.

4th.—Because there are no small chimneys to be broken or cleaned, nor adjusting of wicks.

5th.—Because it stands more firmly than all others, and is of the proper size, and gives proper light.

6th.—Because it has folding handles and may be carried without burning one's fingers.

7th.—Because the flame is so readily controlled, having light-tight slide at side.

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Beginners may work with the apparatus of the school, without extra charge.

The Corresponding Class may be joined at any time.

For particulars apply to

PROF. CHAS. EHRMANN,
423 Broome St., New York.

And after June 24th,
CHAUTAUQUA ASSEMBLY GROUNDS, N. Y.

The Suter Lens in Canada.

BOISSEVAIN, Man., February 7, 1890.

Sirs:—In the possession of the Suter Aplanatic, No. 5 B, I consider I have as fine an instrument as money and skill can produce. For general all-round work, indoor and out, I have no hesitation in saying these objectives are unequaled; their clear definition, flatness of field, and great rapidity, render them capable of faithfully fulfilling the most exacting requirements. There *may* be better; but those who venture on the discovery of such will, I fancy, find them remarkably similar to hens' teeth. Yours truly, JNO. NICHOLSON.

MESSRS. ALLEN BROS. NORWICH, February 1, 1890.

Sirs:—I am more than pleased with the Suter Lens, and would not be without it for twice the amount I paid for it. The one I have is only calculated to take a 11x14, but I have made an extension to my box, and it now cuts out a 14x17 as well as I could wish it to. Would recommend all to try the Suter Lens. I am, sir,
Yours respectfully, HENRY EGGMAN.

MONTREAL, February 3, 1890.

MESSRS. ALLEN BROS., Detroit Mich.

Dear Sirs:—I take much pleasure in bearing testimony to the excellence of the Suter Lens, having had one in use now for over four years, and found it to do everything claimed for it.
Yours respectfully, G. C. ARLESS.

ALLEN BROS., Detroit, Mich. AMHERST, N. S., February 6, 1890.

Dear Sirs:—I purchased one of your Suter Lenses (B No. 4) from Cunningham & Robertson, Montreal, which pleases me in every respect. I would say new beginners who cannot afford to buy a portrait and view Lens would do well to purchase one of these Lenses, as they give every satisfaction for general work. They are equally as good as they are claimed to be for dry plate work.
Yours truly, D. R. PRIDHAM.

MESSRS. ALLEN BROS. WATERLOO, Ont., February 3, 1890.

Gentlemen:—The No. 7 B Suter Lens, which I have had for a year and a half, gives complete satisfaction in every respect. For indoor groups and large heads it is extra good, and for views of buildings and landscapes it is simply grand.
Respectfully yours, E. W. EDWARDS.

ALLEN BROS, Agents,
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Very truly, JAMES BARKER.

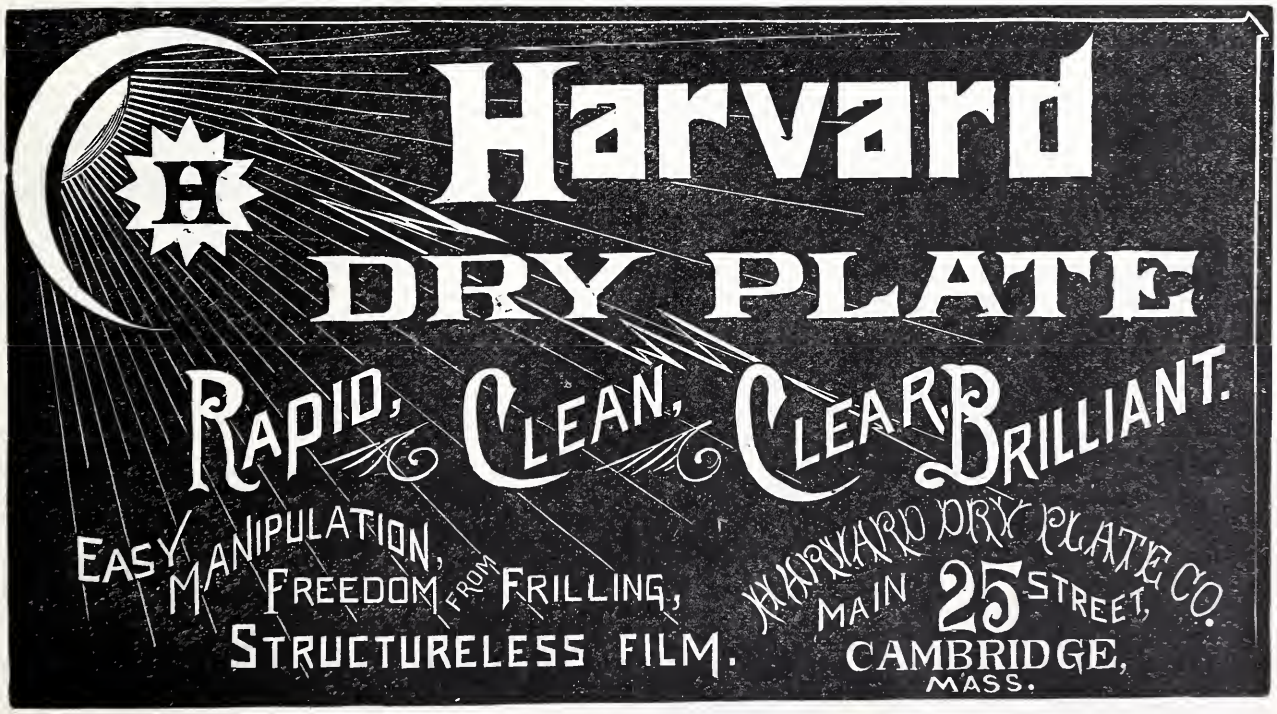
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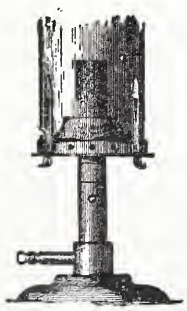
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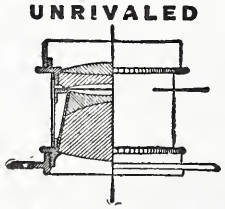
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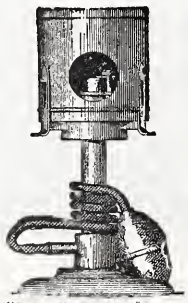
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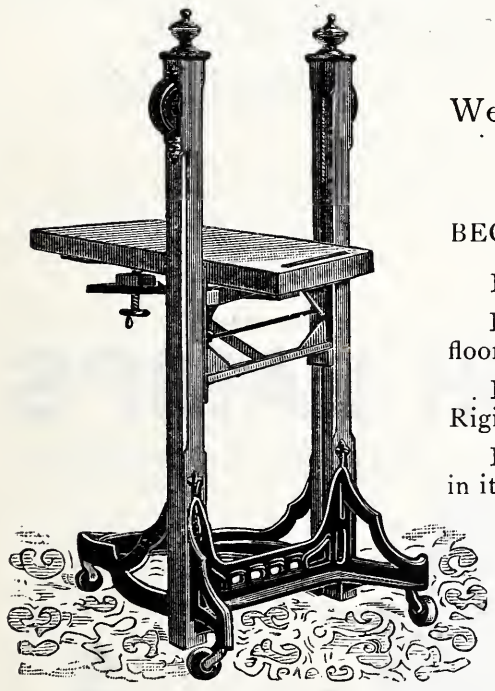
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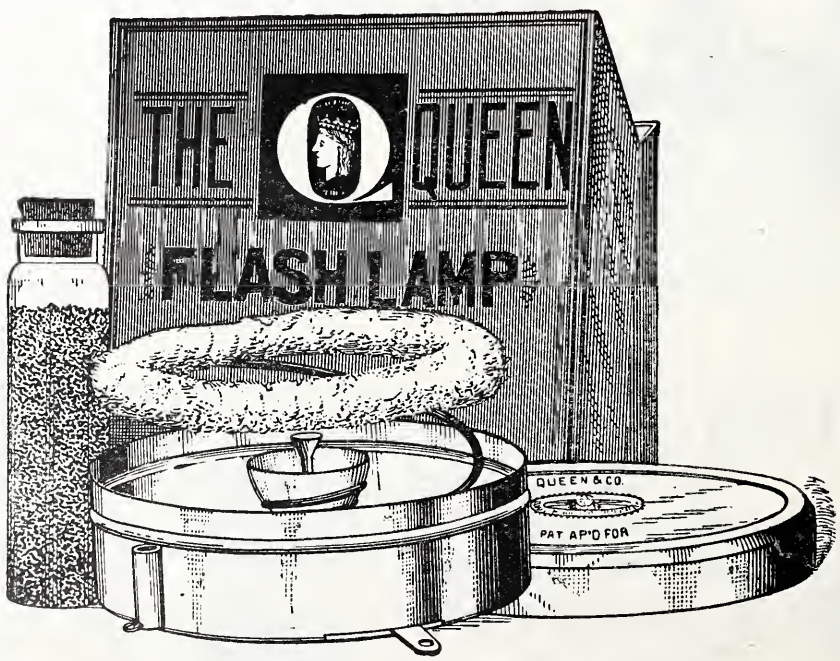
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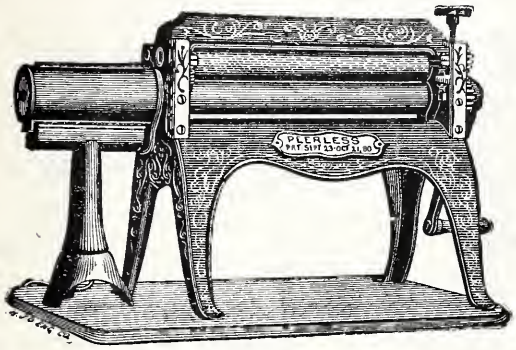
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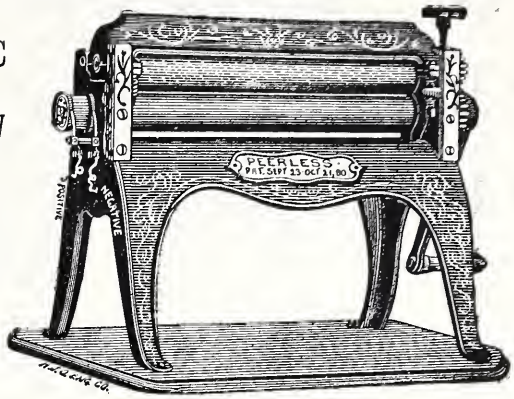
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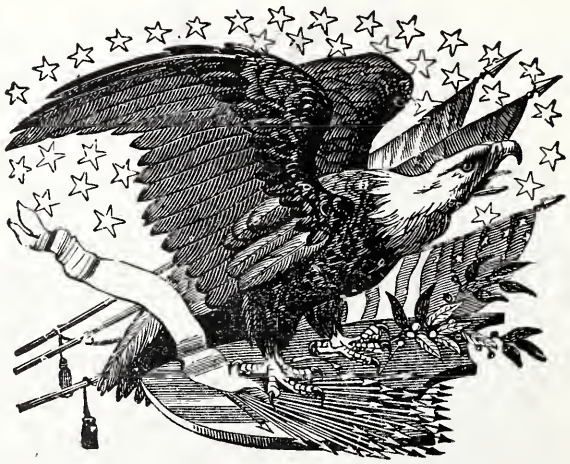
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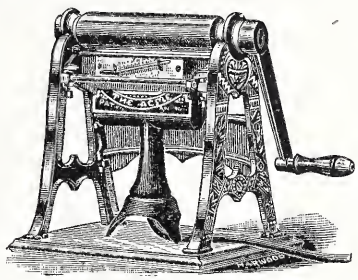
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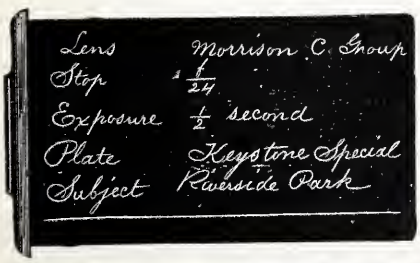
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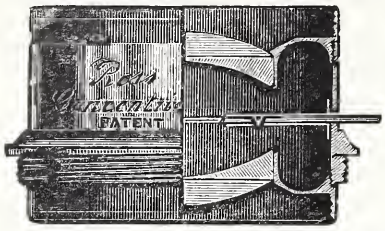
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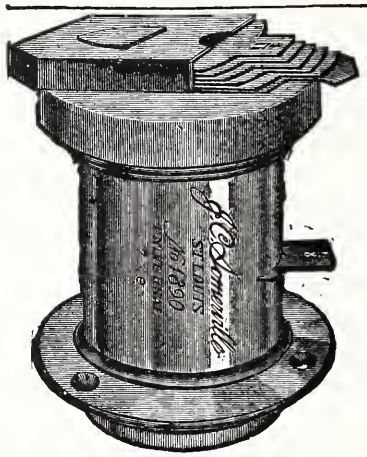
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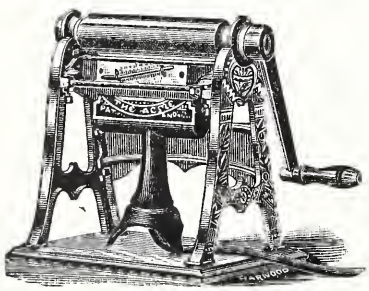
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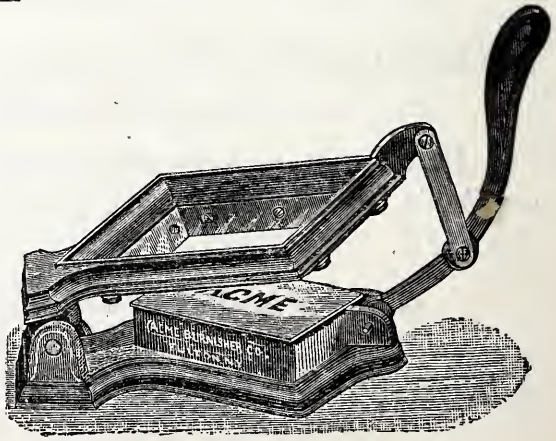
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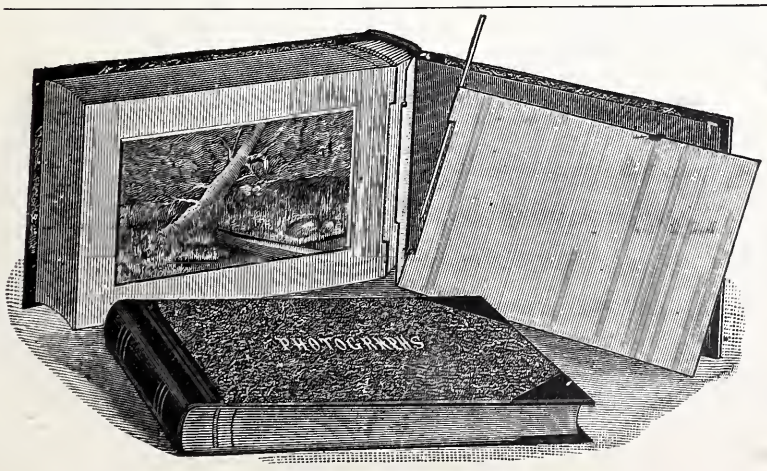
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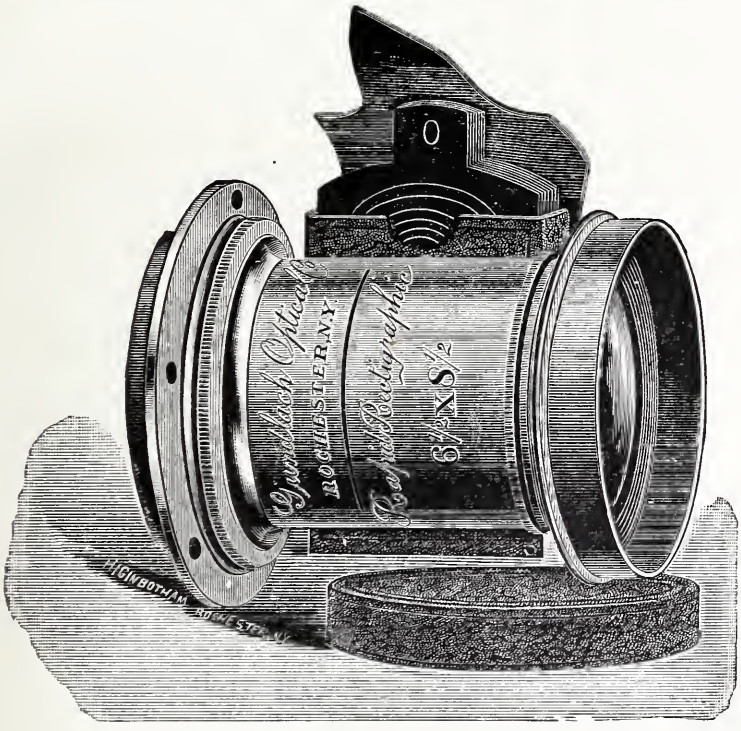
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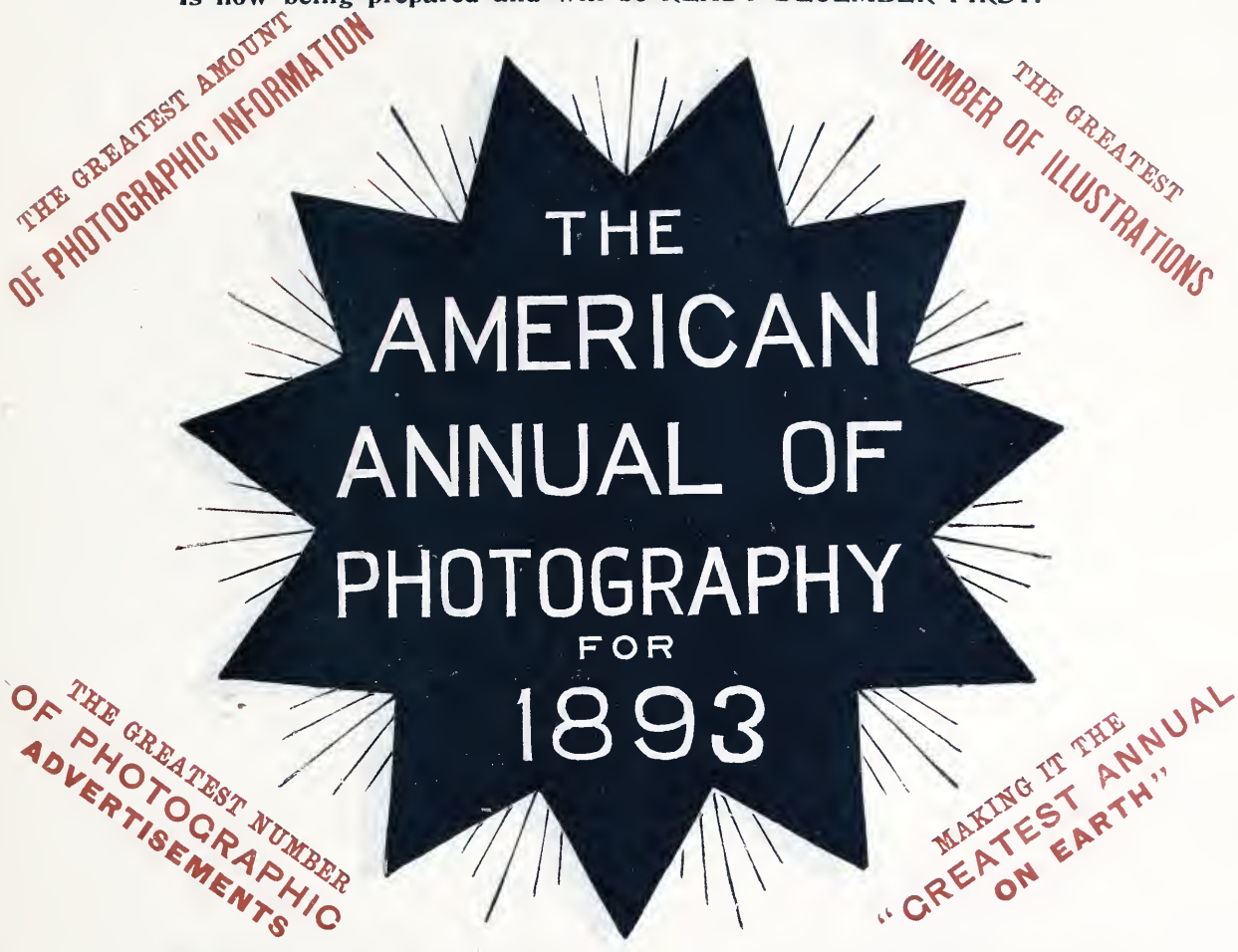
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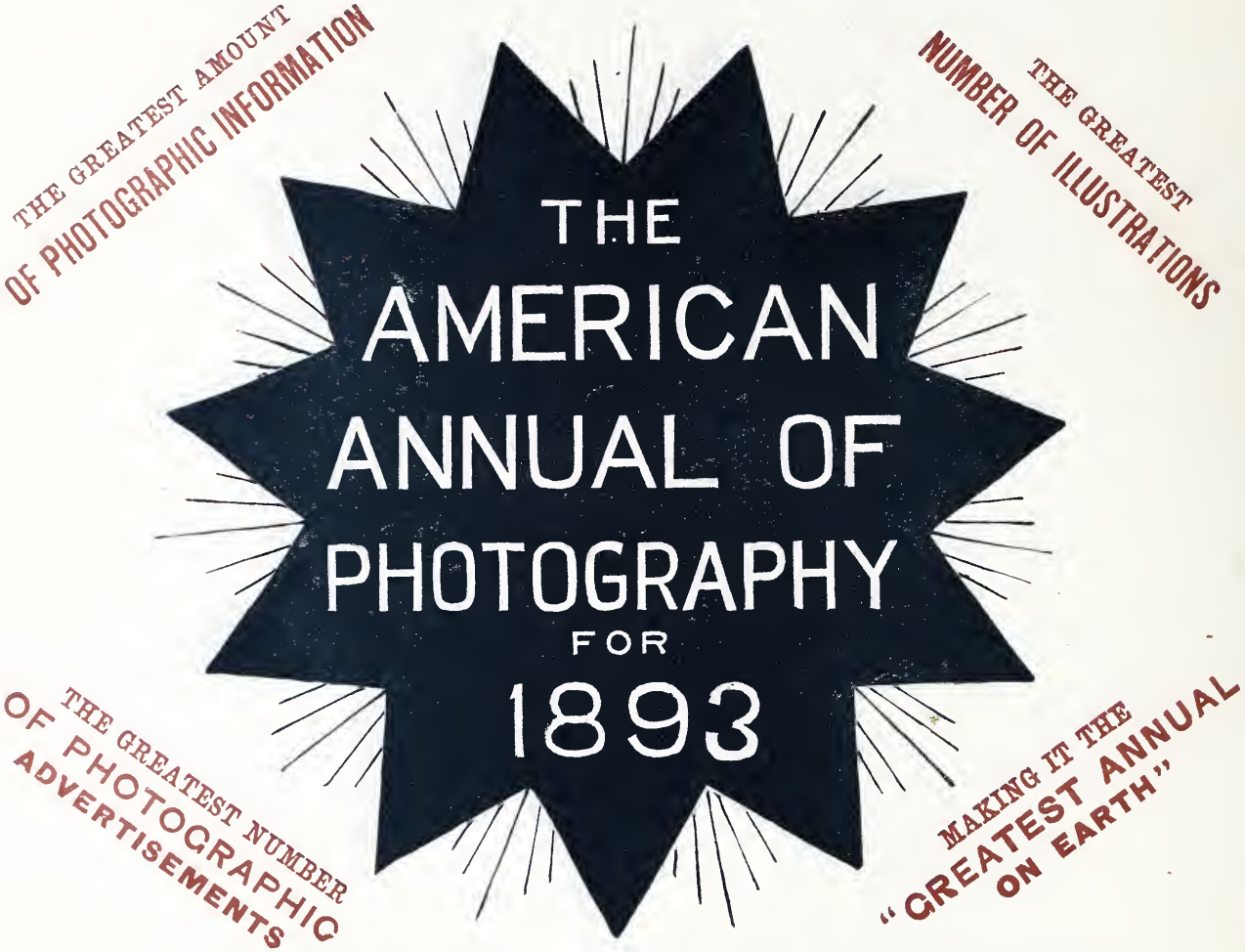
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ELAINE.

OUR frontispiece this week is from a negative by Mr. Ralph W. Robinson, son of H. P. Robinson, who writes the accompanying article in his series on "Picture-Making in the Studio." In that article Mr. Robinson speaks of this picture in detail, so that there is no need of explanation by us.

PICTURE MAKING IN THE STUDIO.

III.

BESIDES the simple kind of rustic picture described in my last article there are other classes of subjects which may be legitimately produced in the studio. Any picturesque subject the action of which takes place indoors is, of course, quite suitable. This includes a very wide range of incidents too indefinite to be clearly stated. It is not necessary that interiors should always be rustic interiors; indoor scenes may range from those in a cottage to those in a palace.

A portrait should occasionally become a picture as well as a likeness. I am bound to qualify this statement, however, by the word occasionally, because it is not every, or indeed, many sitters, coming to us in the ordinary course of business, that bring with them the possibilities of picture making. Portrait painters differ greatly in the effect they give to their works. Did anybody ever see a portrait by Rembrandt that was not a picture, or one by some popular portraitist of the present day that was? Sir Joshua Reynolds differed from most painters in this respect. He may be said to have made all his portraits pictures, and all his pictures portraits. He never painted a portrait that was not interesting apart from any interest in the original, and he never painted a picture that was not a direct representative of a sitter before him. His wonderful "Puck" sitting on a toadstool; his "Infant Hercules Strangling the Serpents," were direct portraits of children, and in his "Holy Family" the virgin is just a portrait of a simple village maiden and nothing more. No painter is more worthy of study by the photographer who wishes to make pictures of his portraits than Reynolds. He could even make a pictorial arrangement of a portrait group, which may be taken as a supreme test of skill in an artist. His children are simply wonderful, and not one of them (color apart) beyond the reach of the appliances of photography, although they may be at present beyond the skill of photographers. Their merit is attained by utmost simplicity, happy expression, and effective light and shade. There is no straining after-effect, and many of his children—the delightful Miss Bowles, for instance*—look straight at the artist, an effect that some writers would persuade us is scarcely permissible. In looking over prints of many of his pictures of children it will be seen that he concentrates the light on the upper part of the figure by the use of what some would call false shadows. And it is true that it would take a good deal of subtle argument to explain the matter-of-fact existence of some of these shadows; but what beauty they would add to the effect!

Photography is the truthful art, but why should we always hamper ourselves with hard facts? If everything is fair in love and war, why should it not be so in art—but I must insist on success to justify doubtful means. The same law of license should allow us to use painted backgrounds. We have taken that liberty, indeed, from very early days, and, unfortunately, seldom done it well, but of late years there has been great improvement in this matter, and you have shown us the way in America. It requires a good artist to make nature and art amalgamate, and not even great skill can always prevent incongruity. Here is an example in a sister art. For several years we have had an excellent dramatic company acting Shakespeare's plays

* In the *Magazine of Art* for March, this year, there is a good photo-block reproduction of this picture.

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in the open air, often in what appeared to be appropriate natural scenery. For instance, a fine bit of old forest was used for the sylvan scenery in "As You Like It." Here we were getting closer to nature than was possible on the stage. Here was the forest of Arden itself, with *Rosalind* and *Celia*, *Touchstone* and *Audry*, and *Orlando*, all true to life as near as imitation would go, but the natural scenery did not harmonize with the artificial figures and words. The half nature half art was a mistake. The effect should have "palpitated with actuality," but the feeling on the spectator was that of a very real sham. And when *Amiens*, surrounded by the company, had to sing about "Winter and rough weather" in very real rain, as sometimes happened, the audience under their umbrellas, as well as the actors, plainly felt that realism is not always cheerful art. A painted background, unless excellently done, has something of the same effect on the artistic feelings, the incongruity is palpable. But if ever painted backgrounds were allowable they would be such simple ones as those in Sir Joshua's pictures, and especially in those of his children.

I may as well take this opportunity of saying that I cannot tell you much you do not appear to know and practise in child portraiture. If I, who only see that of your work which comes over here, may presume to say so, American photographers are to be congratulated on their portraits of children. It is better, as a rule, than we do here.

If we admit the artificial, there are ways of combining natural objects with painted ones that, however they may be condemned in an exhibition of true photography, would, nevertheless, make very pleasing pictures. I mean combining a real foreground "all agrowing and a ablowing," on a platform in the studio backed by a painted landscape. A picturesque foreground may be made upon a platform of rocks, logs of wood, tufts of grass, ferns, heath and wild flowers, which could easily be kept growing and in good condition by a little attention. Care should be taken to use a background without linear perspective, and that the light falls on the figure from the same direction as it does on the painted screen. The platform may be placed on castors or small wheels for the convenience of rolling it about the studio. Of course in this kind of picture the delicate refinements of art must not be expected. It is not possible, for example, to light a figure in a studio exactly as it appears out of doors. A still better effect is produced if, instead of the painted screen, a suitable background is added from nature by double printing. This is easily done. The background behind the figure for this purpose should be plain white, or with a very slight darkening delicately gradated towards the bottom, or it should be stopped out with black varnish, which method, however, should be avoided if possible, it being difficult to prevent a hard, cut-out effect. As I intend to have a chapter in combination printing I need not pursue the subject further at present.

There is a class of fancy subjects which may be carried out without any great impropriety, although it borders on the kind I have denounced as not proper to our art. This class is represented in the illustration, which is from a photograph by my son, Ralph W. Robinson. I have selected it because it comes nearest to some of the Elaine pictures of last year, and yet, I think, does not shock our sense of fitness as some of them do. It does not pretend to say much, therefore there is no glaring violation of truth; there is no anachromiom because it does not pretend to represent any period or any country; there is no departure from historical accuracy because it does not pretend to be an historical event. It is just a "subject" used as a vehicle for the expression of a sense of beauty in line and tone. It represents a girl of our own time polishing a shield, but it is, I think, as near the realization of an abstraction as we can get with our realistic materials. It may be of to-day or of any time, but it does not ask you to believe that it is of any other time than the present. There is a name given to the picture—Medora—but that is only to distinguish it from others. The name may mean anything or nothing, yet I think it is a mistake. It is not Conrad's Medora—he did not possess a shield for her to polish—but that is the unfortunate young person the name suggests to the ordinary reader of poetry. The subject is, as I have said, simply a convenient vehicle for beauty of line and effect, and such subjects I hold are lawful in our art. The figure has the serious fault of being too large for the space, and, like photographs taken with a very long focus lens giving a narrow angle, seems to have been cut out of the centre of a picture.

In all methods which allow an artist liberty there are possibilities of going wrong, and therefore more openings are afforded for the abuse of the enemy as well as the inamadversion of friends. Neither combination printing nor the production of subject pictures should be undertaken without something more than a superficial knowledge of nature. In art a little knoweledge is a dangerous thing; in critics it is want of knowledge that leads to so much intolerance in art. Leslie said that "those who are best acquainted with nature are always the

most ready to tolerate the faults of great masters," and the superficial are not always able to see that

"The light that led astray
Was light from Heaven."

H. P. Robinson.

TONING BATHS FOR ARISTOTYPE PRINTS.

For Black Tones.

A.

Distilled water	500
Acetate of soda, *fused*	20
Chloride of gold, sol. 1:100	40

A.

Distilled water	500
Sulphocyanide of ammonium	10
Gloride of gold, sol. 1:100	40

Ten or twelve hours before use, mix 200 parts of A with 60 parts of B.

For Brown Tones.

A.

Distilled water	600
Borax	5

B.

Distilled water	100
Gloride of gold	1

A few hours before use, mix 200 parts of A with 20 parts of B.

For Purple Tones.

Distilled water	900
Phosphate of soda	200
Chloride of gold, sol. 1:100	100

The prints should be washed as usual before toning.

For collodion aristotype prints a plain solution of hyposulphite of soda 15:100 should be used for fixing.

For gelatine aristotype prints, the fixing bath consists of

Water	1000
Hyposulphite of soda 200	200
Alum, sol. 8:100	50

This bath should be prepared forty-eight hours before use, then filtered.

The above toning baths give very fine tones with albumen paper.

ACQUIRED TALENT.

Photographer—I really think that dog has a taste for photography.

Visitor—Indeed!

Photographer—Yes; every time I admit him to my studio he runs his tongue across every photograph he sees!

EDITORIAL NOTES.

Mr. E. Audra has lately communicated to the *Société Française de Photographie* the formula of a developing solution which consists of hydroquinone and paramidophenol, the former counteracting the tendency of the latter to produce a softness sometimes exaggerated. It is as follows:

In 1000 cubic centimetres of a solution of sodium sulphite at 10 per 100, one dissolves 2 grammes of hydroquinone and 2 parts of paramidophenol or 3 grammes of chlorhydrate of paramidophenol, thus, in English weight and measures:

Water	33½ ounces
Hydroquinone	31 grains
Paramidophenol	31 grains
Or	
Paramidophenol hydrochlorate	46 grains

This forms a nearly incolorous liquid which keeps well, and which by the addition of a more or less great quantity of a solution of potassium carbonate at 100 per 100 forms an energetic and rapid developer for instantanés. However, 10 per 100 (about fifty minims per ounce) is a good average.

Eight or ten plates can be developed in the same solution without the duration of the development exceeds two minutes.

By diluting the developing solution with one-third of water, the time-exposed plates may be well developed.

It is very seldom useful to restrain the action of the developer with a bromide.

In "Photography" we find the following process for enlargements and printing on bromide paper:

A.

Eikonogen	45 grains
Sodium sulphite	240 grains
Water	15 ounces

Dissolve the sulphite in the water, test with litmus, and if alkaline add citric acid until just acid, and then the eikonogen.

B.

Dry pure sodium carbonate	240 grains
Water	5 ounces

C.

Potassium bromide	120 grains
Water	1 ounce

To develop, take

A	3 ounces
B	1 ounce
C	10 drops

If the exposure is correct the tone will be al

that can be desired, but if unsatisfactory it can be made all right by toning before fixing in

Chloroplatinic acid	10 grains
Water	10 ounces
Nitric acid	½ drachm

The best way to proeeed is to develop in the usual manner in the dark-room, then wash off the developer for, say, five minutes, in running water, and place the print in 10 ounces water acidulated with ½ a drachm nitric acid. When in this solution it may be examined by weak daylight. If satisfactory wash this off and fix; if unsatisfactory, tone as above described, and then fix.

ONE of the most certain and active causes of microbic diseases is through the agency of water. The question of its purification has therefore a great importance in tropical countries, and in the warm seasons in higher latitudes, especiaily in time of epidemics—the cholera, for example.

The most simple manner of purifying is to add 25 grains of common alum to every 10 quarts of water in the afternoon. The next day the water can be drank to within 6 inches from the bottom; and it should be used within 36 hours, else it would be again contaminated by the microbes precipitated with the organic matters: they are not dead, and revive when the water is heated to 105 deg. Fahr., and also by time.

Boiled water kept in a hermetically closed vessel is also free from organisms.

SHARP VS. UNSHARP.

PROBABLY nine out of ten persons express a preference for that photograph which is "sharp" to the corners—other qualities being equal, portraits not considered. And I believe the preference is natural and correct.

The human eye is ordinarily not able to "see" distinctly a surface much larger than an inch in diameter at the usual reading distance, and while the eye does see this much with more or less clearness it may, and usually does, apprehend a far greater field of view with more or less *in*-distinctness.

The will directs the centre of distinct vision toward that which it is desired to particularly consider, and the mind naturally anticipates a certain degree of satisfaction as the result; the remaining objects of the view are for the time subsidiary, and serve only as agreeable accompaniments which, by appropriate contrasts, add to the mental satisfaction.

This describes the act of viewing any natural scene or object—all scenes or objects having well-defined outlines both in their entirety and their detail, so that the eye and the mind may be agreeably satisfied whether it is desired to observe the general effect or the more minute details.

I believe the foregoing will not be disputed, and from these facts can be drawn a simple explanation of the almost universal preference for "sharp" photographs.

This argument is often made for unsharp pictures, that "we do not see everything sharp at once in nature and therefore we should not make photographs sharp all over." Very well; the fault lies with the human eye and mind, which is not capable of comprehending everything at once. But everything is "sharp," as we will understand when particularly observing the details.

Now a photograph to be true to nature and satisfying in the highest degree to the senses should be in every part just as sharp as possible to make it! So that when it is viewed in detail, as it must be, owing to our natural visual limitations, we may be able to see as we would if actually in the field, and not have our anticipation baffled by an unnatural blur in any part.

This may be called in-"artistic," but if Art is true representation of nature, then I think I have shown the ground for my argument, which *is* nature.

C. D. Cheney.

WANTED: PERMANENT PRINTS.

IT is much to be regretted that the silver portrait is not permanent, and that the first attempts of the amateur in that line must eventually fade and turn yellow. His ignorance of the subject, and his desire for the finished picture lead him to hurry the process when time and chemical energy will mar the most highly prized of all pictures, the first.

The writer once read an article entitled "A Plea for the Collotype Process," which was the old lithographic process of making a positive from a negative, with bichromated gelatine, when by the mere act of printing from this with lithographic ink a picture would result which is as permanent as the paper upon which it is printed. With different colored inks the monotony of one color may be obviated.

We have seen pictures made by this process and they were excellent although lacking the gloss of the silver print.

Like everything else in this country the process

is in the hands of a favored few, and enough of the process was given to lead the enthusiastic amateur to experiment, knowing well enough that success would not crown his efforts and that in the end they would reap the benefit by his patronage.

We acknowledge ourselves fooled. and have written this in the hope that in a succeeding issue of this excellent journal some one may write upon this subject who has had more success than I have been accorded.

E. L. Bowlus.

THE COLOR-SCREEN IN LANDSCAPE PHOTOGRAPHY.

[Read before the Photographic Convention of the United Kingdom.]

The value and use of orthochromatized emulsions in landscape photography is now fully recognized; but, as yet, there still appears to be considerable difference of opinion in regard to the necessity of the coincident employment of the color-screen. It is stated by many of the manufacturers, who at present supply the market with iso or orthochromatic plates, that the use of this valuable adjunct is by no means necessary, and that equally good results can be obtained without it. Having, during the past two years, made extended trials for landscape purposes of orthochromatized emulsions, coated on both glass and celluloid films, and during these experiments made frequent use of the color screen, a few notes on the principles and methods of its employment may perhaps be of interest. The class of subjects selected was almost exclusively landscapes, and the large majority extended landscapes in the mountainous regions of Switzerland, Norway, and Northern Italy, involving distances ranging from ten to one hundred miles. The first year the color-screen was used sparingly, but the results obtained with it were so satisfactory that in the following year it was used whenever possible, and the success attending its use was so marked, and the quality of the work so far superior to the portion in which the screen was omitted, that I now am fully convinced that the color-screen is an indispensable adjunct for any extended or comprehensive landscape work. The reasons for this opinion are not hard to find. It is a well-known fact that when an open landscape is photographed on an ordinary gelatine emulsion, two serious difficulties are always encountered. These difficulties bear such a relation to each other that the means employed to prevent the one always increase the evil effects of the other. I allude to the difficulty of obtaining even and harmonious exposures for both near foreground and extreme distance. The rapidly vibrating blue rays coming from the more distant portions of the landscape produce in an extremely short time a very powerful reducing effect upon the emulsionized silver silver salts, and that long before the more slowly vibrating rays coming from the nearer and generally darker foreground have had time to properly act on the plate. The consequence is, that when proper definition, detail, and color value have been obtained in the foreground, the distance has been so over-exposed as to solarize to a greater or less degree that portion of the image. On the other hand, should the exposure be so shortened in time as to obtain proper values for the distance, the foreground is so hopelessly under-exposed as to be but an unmeaning smear of black, devoid of all detail.

All kinds of devices have been suggested for remedying these difficulties. Sky shades, shutters having apertures of different shapes fancied to diminish to a certain degree the exposure of the sky and distance, &c., have at different times been suggested, but none of these have proved of sufficient value to become popular.

The difficulties, as above noted, are particularly noticeable in the case of Alpine landscapes. Here, then, is often a foreground of rocks and dark pines, abounding in dark greens and browns, and opposed to it a distance composed of brilliant snow-white peaks and glaciers, standing out against a deep-blue sky, varied, perhaps, with floating clouds. With an ordinary emulsion it is almost impossible to render properly such a landscape, as the foreground will be under-timed and lacking in detail, or else the peaks and sky will be so over-exposed or "burnt out" on the negative as to render the demarcation line between snow and sky almost indistinguishable. When, however, certain coloring agents are added to the ordinary emulsion, as is done in the process of orthochromatizing, an entirely new condition of affairs is brought about. I will not attempt to explain this in detail, for it has and will be done by much more able and qualified hands than mine. Suffice it to say, briefly, that while the emulsion is now, in its altered character, a little less sensitive to the action of the blue rays of the spectrum, it is more sensitive to the yellow, green, and red rays coming from the opposite end of the spectrum. A plate of this character, when exposed to the same Alpine landscape as previously tried, would exhibit much more detail in the foreground, and the distance would be in much better tone. But, although the sensitiveness of the plate, as orthochromatized, is of a much

less degree as far as the blue rays are concerned, they are so powerful that they still act too rapidly on the emulsion, and it is desirable to limit still more their effect. This is accomplished by the color-screen. A suitable colored medium, in this case yellow, is interposed between the object and the sensitized plate. This medium intercepts the passage of the blue rays to a certain extent, or diminishes the rapidity of their vibrations, and, while prolonging thus the exposure, allows the reds, greens, yellows, etc., to pass through without hindrance and impress themselves fully upon the plate. The resulting image will now represent in much more accurate color tone, as expressed in black and white, the different values of the landscape, giving full detail and softness to the foreground, and showing in the distance white peaks against a darker sky.

For purposes of landscape photography the color screen employed should generally be of a light yellow shade, except in some special few instances, when, to obtain particular effects in a landscape, colored screens of more or less of a red or reddish-orange may be found to be desirable.

From this brief explanation the principles which govern the employment of the color screen may be made apparent, and on its very face the theory of its action would seem to be correct and of sound value. And I unhesitatingly assert that, when the color-screen is *properly* used, the results will, in every instance, bear out the sound principles of the theory. Landscapes when, while full justice is given to atmosphere, the distant ranges of hills are as clearly defined as they would be to the eye; water which looks like water and not an expanse of snow; foilage and verdure which show the varied shades of greens with which nature bedecks herself; or the varied tints in an autumn landscape, and clouds of white or pale gray floating on a darker sky, as we see them daily in the heavens. But a color screen should be used with judgment, as should every other photographic adjunct, if good results are to be secured; not for every subject, or for instantaneous work, or generally for objects close at hand, but for the special work for which its usefulness has been explained. Let us for a moment consider this and its practical features a little more in detail.

The first point to be considered is the color-screen itself. This should be of glass, perfectly flatted and ground to a true surface, or else it will produce such an amount of distortion as to render it totally unfit for use. In England, I have been informed, one or two firms offer for sale color-screens made of yellow pot glass, ground and polished to a true surface. The only one of these I have been able to see was of so light a color, and that more of a brown than a yellow, that I should feel afraid to use it. The quality of others may be better. It is very easy, however, for any photographer to prepare his own screens, and of whatever color he may desire, by a process which I shall now describe.

Procure plate glass, thin, perfectly flat, ground, and free from all striæ or bubbles. The thin plate glass that is frequently used for making color cells and animalculæ tanks for the gas microscope will be found to be excellent for this purpose. After being cut in small squares of the size desired ($2\frac{1}{2} \times 2\frac{1}{2}$, and $3\frac{1}{3} \times 3\frac{1}{2}$, I have found answer nearly every purpose), a square should be flowed on one side in the same manner as when coating a plate with collodion, with a solution of the coloring agent in amyl-acetate collodion. The coloring agent may be either "aurine" for orange-red, or any other coloring matter desired, provided it is soluble in the varnish. For the yellow screen I am in the habit of using an aniline dye, called "golden yellow," in the proportion of from five to eight grains of the dye to the fluid ounce of varntsh, according to the depth of tint desired. It is permanent, does not fade to any extent, and gives a rich lemon-yellow screen. The amyl-acetate collodion, now extensively used in the United States for the purpose of lacquering gas fixtures and brass work of all kinds, is known in trade by a number of different fictitious names such as "enameline," etc. It is simply a solution of soluble nitro-cellulose in mixtures of amyl-acetate, ether, petroleum, benzine, and alcohol, mixed in varying proportions. It can be easily prepared on a small scale by cleaning off the emulsion from a spoiled celluloid film, cutting the film up in small strips (soaking them well in strong alcohol to remove the camphor), and placing these in a bottle with a mixture of one part amyl-acetate, one part petroleum benzine, three parts alcohol, and three parts ether, all by measure. The celluloid swells up and dissolves rather slowly, hence the bottle containing the mixture should be well shaken at intervals for several days. A better collodion is made, however, by dissolving good nitro-cellulose in the above mixture. When the celluloid is all dissolved, the liquid should be filtered through a little absorbent cotton to remove any loose flecks of dirt. This varnish gives a tough film, clear and free from transversed stria, and is also an excellent material for varnishing glass negatives or positives, being perfectly waterproof. To resume, the glass square, after having been coated with the colored varnish, is allowed to "set" for a few moments, and then placed aside on a flat sur-

face until the varnish is perfectly hard and dry. Care must be taken to keep it covered while drying, so as to avoid dust and dirt settling on it. The coated plate is now placed on a level surface, film upwards, and sufficient pure Canada balsam (white and free from dirt) poured on the plate to make a pool in the middle of the plate of about one-fourth of its area. A fresh, clean glass square of the same size is next taken, and gently lowered on the balsam and plate in the same manner that a cover glass is placed on a microscopic object, and then a gentle and even pressure applied until all air is forced out, and the two glass surfaces are cemented together with the balsam and are in uniform contact. The cemented plates are now laid aside on a flat surface, and allowed to remain several weeks undisturbed, until the balsam has thoroughly hardened. Then the edges are cleaned off, the exuded balsam being removed with a little benzine or benzole, and the edges bound with some strips of lantern-slide paper. This color screen can be placed either before or behind the lens If before, a special hood for each lens must be made to hold it. I therefore prefer to use it *behind* the lens, on the inside of the lens board, when it can be placed or removed in a few seconds. This can easily be arranged with two small brass or wooden cleats, secured down on the inside face of the lens board, and adjusted so that the color-screen can slide between them.

The next item is the subject. It is hardly necessary to say that moving objects and all instantaneous work are entirely beyond the scope of the color-screen owing to the length of exposure required. Moving clouds can often be satisfactorily photographed when the motion is slow, and the exposure made with the full aperture of the lens from half to two seconds being generally sufficient. Large masses of cumulus clouds, and also the lighter and more graceful forms of the cirri, can be made, when at rest, to repeat themselves on the photographic plate with rare fidelity by the aid of the color-screen. There are many days of the year when these remain almost quiescent in the sky, and, as no great stopping down of the lens is needed, a large aperture and short exposure will yield excellent results.

For ordinary landscape work in close proximity to the subject the use of the color-screen is unnecessary, unless some special conditions of color exist. Still life, fruit and flour subjects, however, are especially fruitful fields for the color screen in conjunction with the orthochromatic plate. Here time is of no importance, absolute sharpness and fidelity of detail can be secured by stopping down the lens, and with a full exposure, every feature of the object will be reproduced. The principal use of the color-screen in landscapes photography, however, is in field work, especially where extended country, and often extreme distance, are concerned. Here the color-screen is an *absolute necessity* in order to secure uniform and satisfactory results. I have photographs in my collection taken from the summit of the Furca Pass in Switzerland, where, while the foreground is harmonious and full of detail, the Alps of the Mounts Blanc and Rosa group are distinctly visible, although at least sixty miles distant. I have also noticed in the use of the color-screen, when photographing in both Switzerland and Norway, has given much more brilliancy to the dull monotone so often noticed in the photographic rendition of long stretches of bare mountain side, it seeming to differentiate and accentuate the different tones of browns, dark grays, and greens so prominent in such landscapes. In fact, I have grown to rely so much upon the color-screen in photographing these extended views that I fear no landscape, no matter how extended, provided it is properly lighted, and I think I can show as satisfactory results for such subjects as it is possible to compress into the limits of a small photographic plate.

A word may also be said just here in favor of the use of celluloid films. Glass is as yet undoubtedly the most perfect medium of support for the photographic emulsion. But it is heavy, liable to break, and for distant landscape work apt to show halation. This latter, it is true, can greatly be prevented by backing the plate, but it is a tedious, dirty process, and involves infinite trouble. Celluloid, as now prepared in the United States, is rapidly taking the place of glass for tourists' work. It is now manufactured almost free from defects, and is so light and portable that a gross of 8 x 10 size will take up no more room, and weigh no more, than one dozen of the same size of glass plates. It cannot be broken, and, moreover, is almost entirely free from halation, owing to the thinness of the film and the consequent absence of reflecting surfaces. To illustrate its advantages, I may say that last summer I took a three months' trip through Norway, carrying with me, in a small Norwegian trunk, together with my clothing, sufficient material for six hundred 8 x 10 exposures. The weight of these films was about thirty pounds; the same amount of glass plates would have weighed over four hundred pounds—an almost insurmountable burden, unless one travelled with a baggage train.

It remains to say a few words concerning exposure and development. Exposures for ortho-

chromatic plates should *always* be fully timed to secure soft and harmonious negatives. An under-exposed orthochromatic plate or film is much more inclined to fog on development, and is much more harsh and lacking in detail than an ordinary plate of the same speed would be if subject to the same conditions. On the other hand, the orthochromatic plate, and even more so the film, will bear an amount of over-timing which would simply be ruinous to an ordinary plate. When a color-screen is used the exposure should be prolonged eight or ten times, and my friend Mr. F. E. Ives, who is world-celebrated for his researches in color photography, has assured me that twenty times is none too much. I have no doubt some advocates of rapid exposures will be shocked by this statement, but, when we consider the retarding effect of the color-screen, the amount of "leeway" in exposure is in consequence immensely extended. In all such work plenty of time in exposure is necessary to obtain full detail. The distance will take care of itself, so will the clouds, and unless there is a brisk wind blowing they will show up all right in the negative. Furthermore, in overcast or cloudy weather, exposures on orthochromatic emulsions, either with or without a color screen, must be greatly lengthened, much more so than for ordinary emulsions under the same circumstances. For instance, if I gave two or three times the exposure (using an ordinary plate) on an overcast day that I would on a bright, clear day for an orthochromatic plate (using no color-screen), I should give from *four* to *eight* times the exposure, and, if I did not do so, I should get an under-timed plate. If a color-screen is used in addition, the exposure should be increased proportionately as previously mentioned. Most of my failures with the color-screen and orthochromatic film have been from this cause—under-timing on cloudy days. There seems to be, under these circumstances, an absence of certain light-rays in the atmosphere (yellow, perhaps), which ordinarily affect more quickly the orthochromatic emulsion. After I discovered this I have frequently, after making an exposure, the time of which I had judged should be ample, made a duplicate exposure, in which, for purposes of experiment, I doubled the exposure, and almost invariably the longer-timed negative came out the best.

Finally, a word or two may be said regarding the development of the exposed plate or film. The developer used must depend largely upon the purposes for which the negative is to be used. If for bromides, lantern slides, or transparencies, my preference is for the mixed developer of eikonogen and hydroquinone, it giving negatives possessing the full detail and quick-printing qualities especially requisite. For platinotype, plain silver, and kallitype, I am growing to believe that pyro gives perhaps better results. The steel or blue-gray image produced by the mixed developer gives a density which seems greater than in fact it really is, and in printing processes which tend to diminish contrast it will not give as brilliant and "plucky" a print as will the slightly yellowed pyro-developed negative."

Charles L. Mitchell, M. D.

FROM LETTER OF A CHAUTAUQUA STUDENT TO HER INSTRUCTOR.

I MUST tell you of one little item of assured success that encourages me greatly. A cousin and schoolmate returned in the spring from a trip around the world on his bicycle with a kodak, and sent me his last two rolls of films to develop. I confessed my lack of skill and really wished not to do it, but did. The first few were such failures, the film fogged so badly, that I asked to be allowed to send them to some one else. Word came back that the proofs sent were as good as the average of those developed elsewhere and to keep on.

At the same time I had to develop a roll of exposures that amounted to very little in themselves and fogged about the same, so I took the liberty to make them the subject of some experiment. I had been trying to no great extent some para-amidophenol developer hydrochlorate purchased from Scovill & Adams Co., and by the formula given therewith. The formula is one of your own. I got with this noticeably better results than with pyro carefully made and used according to the Eastman prescription, or with eikonogen or hydrochinon, or with any combination of the last two. A number that I failed to develop to printing density were clear enough that I intensified them successfully. Out of more than two hundred exposures I failed in only a few cases to get a tolerably good negative, and many of them are certainly good negatives. Anyway the kodaker expressed unlimited satisfaction with the results, and asked if I would make a complete set of prints from all the negatives of the journey.

Lucy D. Baldwin.

PICTORIAL SELECTION IN PHOTOGRAPHY.

[Photographic Section of the Croydon Microscopical Society.]

In dealing with the composition of pictures in reference to photography, apart from painting, it is only necessary to treat of the position and arrangement of lines, the balance of parts, the variation in the tones of light and shade, and the most suitable positions for the introduction of figures or other objects which shall go to form a pleasing picture.

Let me, however, at the outset explain that it is farthest from my wish to insist exclusively on any one series of rules upon which all pictures should be constructed, any more than I would desire to enforce a standard by which all works should be judged, whether they be good or bad. I mean that, having regard to the great difference of opinion held on matters of art, it is useless to lay down an inflexible or hard-and-fast line which admits of no departure. I hope, therefore, the remarks I may make will be accepted rather in the light of "hints," in the carrying out of which a better result may be obtained than would otherwise occur should these points be overlooked or neglected.

Seeing that photography is so purely a mechanical process, in which the artist has no chance of leaving out any objectionable object which may detract from the view before his lens, it is of the utmost importance he should know some of the principles on which a good picture is built up, in order that he may in some measure be able to cope with the difficulty and perhaps overcome it. To know where and how to select the best standpoint, how much of the prospect to include in his picture —and, of equal importance, how much he should *ex*-clude—to note the changes under varying lights, the relief of those portions in light against others in shade or cast shadow, the judicious arrangement of parts, or the apt introduction of figures requires more training than the setting up of a camera, the snapping of a shutter, and the subsequent development of a plate; yet it is only on acquiring such knowledge that the photographer is able to excel, or that really artistic pictures can be produced.

To some these matters present little difficulty; they grasp or overcome them without apparent effort, in some instances are hardly conscious of having exercised any discrimination in their choice, and, if questioned on the composition of their pictures, could only tell you "they liked them that way best." Others are not so happy; they never get successful pictures—their horizon is too high or else it is too low, sometimes too dense, at others hard to find; the front elevation of a house appears to afford them interest, whilst a large tree in the centre, with a smaller one equidistant on either side, seems to them quite an ideal picture, the embodiment of perfection in composition, having a due regard to the equal balance of parts. Sometimes they essay figures or portraits (?) of their friends, and, remembering the triangular form has been by some greatly extolled, they straightway place their central figure in a standing position, carefully arranging the residue of their victims in sloping order on either side, with a result too dreadful to dwell upon.

One could multiply these instances, but enough has been said to show how necessary it is to have either some knowledge of pictorial effect or, failing this, the desirability of becoming acquainted with a few of the rules of art.

Composition is the art of properly disposing or arranging in the most effective manner the various forms and objects which constitute a picture, or in other words, the judicious selection and combination of various parts which, when united, form one perfect whole. Sir Joshua Reynolds, when speaking of painting, says: "Composition, taken generally, is the principal part of invention, and is by far the greatest difficulty the artist has to encounter. Every man that can paint at all can execute individual parts; but to keep those parts in a due subordination, as relative to a whole, requires a comprehensive view of the art that more strongly implies genius than perhaps any other quality whatever." Let us now see of what this quality consists; and, in the first place, consider the arrangement of lines.

Lines.

The term "line" is not altogether satisfactory, as there are no actual lines in nature, but it must in this instance be understood to refer to the apparent boundary of different objects the limit at which they seem to merge the one into the other. The most important line, or that which has the greatest influence on all the others in a picture, is known as the horizon, or "horizontal line," which should always indicate the height of the eye of the spectator. This line varies in height with the position chosen, so that, when standing on a common or the seashore, the horizon appears low, but in ascending a cliff or hill it is found to rise in proportion to the height attained; hence, in the former case of the seashore the horizon would be situated about a third or a fourth of the height of the picture above the base line, whilst in the latter instance it would be much nearer the top. It

should not on any account be allowed to divide a picture exactly in the middle, as in this case all lines receding from the spectator, either from above or beneath, would be too equal to form a pleasing result. No exact height need be given, but, as a guide for all open prospects which present great distances at a low level, it would be well to assign the horizon a position not exceeding say, one-third the height of the picture above the the base line, where it would give greater variety to the lines running from the spectator, and altogether form a more pleasing and agreeable composition. For pictures taken from an elevation, the space from base to horizon would perhaps occupy three-quarters of the height of the composition, or possibly even more; but let me here remark that the greatest care should be exercised in determining the height of the horizontal line, as it is on reference to its relative position that an intelligent observer would recognize at once the altitude from which the picture was taken. It is equally necessary to bear this in mind when making "slides" or trimming prints to guard against cutting off more of the foreground than the sky, thereby reducing the height of your horizon, and in consequence falsifying your picture.

Having decided on your horizontal line, it is necessary now to note the direction taken by the other lines, which are regulated by the position of the "point of sight."

Point of Sight.

The point of sight is always situated, as you are aware, opposite the eye on the horizontal line. You will remember the fact that objects are seen by means of rays of light proceeding in straight lines, some of which meet at the eye of the observer; and I need only point out that, supposing that observer should choose the centre of a long, straight, and level street for the scene of his operations, he would get a series of lines from the ruts, gutters, footways, and houses more suggestive of a geometrical design than a pleasing representation of an inhabited thoroughfare. The same remarks apply to the point of sight as were made in reference to the horizon in the undesirability of giving it a central or middle position. It should be placed, more or less, either to the right or left of the centre, so that, by presenting more of the subject on one than another, formality is avoided, and the angles of the general lines are more advantageously varied.

Having determined the position of the horizon and the point of sight, it should next be seen how the lines of the landscape compose themselves. Many methods have been advanced for the most perfect arrangement of lines, but in the infinite variety of subjects which are presented it is almost impossible to be guided by precept alone. Parallel lines should always be avoided, as, apart from their tendency to suggest a geological diagram, they serve to conduct the eye from side to side of the composition, a defect which should be carefully guarded against. Lines which guide the sight perspectively through the picture, or which lead the eye from the foreground through the middle distance on to the horizon, are always the most pleasing and agreeable, and should invariably be selected in preference to all others. Lines which have a tendency to encircle a view should not be lost sight of, as, in addition to the help they afford of keeping the eye in the picture, they also assist to concentrate the attention on the chief point of of interest beyond. As instances of this effect I might cite "A Peep Between Trees," or a pathway through a wood, in which the stems and branches of the trees would take the direction named. If in the first position you have chosen to set up your camera you find the lines of the foreground rising perpendicularly from the base line, reject it at once, and move to a spot where they shall incline either to the right or left. The lines, then taking a slanting direction, will lead the eye into the picture in a far more agreeable and satisfactory manner than if they had followed the vertical tendency which obtained in the first situation.

Points.

Observe where the most prominent feature of your landscape comes, whether too much in the centre of your picture or too near its limits. It is generally considered bad taste to have any object coming exactly in the centre of a composition, so that it shall be equidistant from the outside lines of the picture, and this should be borne in mind when focusing the landscape, but I shall have something more to say in reference to this later on. Note whether you have one point immediately over another, and, if so, make some little alterations in your position to remedy this defect. Do not have two or more parts of your picture of nearly equal size; neither let the undulations of, say, "a moorland with distant hills," cut up your composition into several equal portions—a circumstance of very frequent occurrence in all such situations as well as in mountainous districts.

W. D. G.

(*To be continued.*)

Notes and News.

Paris, July 29.—A leading Paris paper, the *Eclair,* is offering a gold medal as a prize to the finest writer, without distinction of nationality. It is not literary merit that is wanted, as the above announcement would lead one to suppose. The prize-giving editor merely wants to know how many words can be written on a piece of paper. Replies have already been sent in.

As an art, small writing has been killed by photography. Microscopic photography was simply invaluable to France during the siege of Paris, when carrier pigeons were daily sent out with 10,000 private letters photographed on a pellicle two inches square rolled up in a quill. There are still, however, plenty of amateurs, some of them distintinguished and even illustrious. I may mention, for instance, Alphonse Daudet, who has often, out of fun, written original newspaper articles on a leaf of cigarette paper.—*Corr. N. Y. Tribune.*

Enamelling without Collodion or Gelatine.—The *Progrès Photographique* publishes the following process to enamel positive proofs without collodion and gelatine:

Mix oxgall and alcohol by equal parts and let the solution stand for three days, when it should be filtered and kept for use.

Coat a glass plate with this solution and lay the print upon it in close contact. Let dry—which requires about one hour—and paste a sheet of paper on the back of the print, this sheet of paper being afterwards coated with a mixture of gum, dextrine and a little glycerine. The whole being dry, remove it from the plate, and it will now suffice to apply it with strong pressure on a mount previously wetted, to have the print mounted with a full gloss.

Borax should be found in every household. A handful of borax in nine or ten gallons of water will be found invaluable either as a substitute or in conjunction with soap, and is vastly superior to soda, as it does not fade colored clothes. It is used for washing laces and imparts additional gloss to collars, cuffs, or any other starched fabric, and is far superior to alum in rendering fabrics fireproof. As an insecticide it is invaluable; roaches will not haunt a place where it is scattered, while it is harmless to domestic pets. A small proportion (one in 100) will retard the souring of milk for 24 hours, and this amount is not injurious to health. Mixed with glycerine or honey it is used as an application in throat diseases, and is very valuable as an antiseptic and disinfectant.—*The Pharmaceutical Era.*

Mrs. Cleveland has about as interesting a collection of pictures as any amateur photographer in the country, as for some years past she has carried about with her a small but fine kodak camera. Within the past year this has been superseded by a regular photographic outfit, since she is ambitious of more satisfactory results than are possible with a kodak. Many of the best views have been developed and mounted to form the nucleus for an album, which promises to be as interesting as voluminous. Whether or not Mrs. Cleveland has been able to give much time to this pursuit since the arrival of little Ruth I do not know, but prior to that time she was an enthusiast on the subject, and devoted many hours to the study of photography, for which her fondness dates back to the days of her early married life in the White House. Among the friends who then visited her was Miss Farnsworth, of Albany, who carried back home some of the prettiest pictures of the White House interior and its young mistress which have ever been taken. Mrs. Cleveland has a complete set of these pictures, the majority of which are cabinet size. Another set of Miss Farnsworth's pictures are those showing glimpses of Albany at the time of the great blizzard.

Among the places which Mrs. Cleveland has kodaked are bits of scenery at Marion, Mass., the Adirondacks, the New York residence, and the new house at Buzzard's Bay.

Luminous Paints in All Colors.—A German contemporary gives the following series of receipts for these paints, which may prove useful. The luminous paints can also be used as wax colors for painting on glass and similar objects by adding, instead of the varnish, 10 per cent. more of Japanese wax and one-fourth the quantity of the latter of olive oil. The wax colors prepared in this way may also be used for painting upon porcelain, and are then carefully burned without access of air. Paintings of this kind can also be treated with water-glass. For orange luminous paint, 46 parts varnish are mixed with 17.5 parts prepared barium sulphate, 1 part prepared Indian yellow, 1.5 parts prepared madder lake, and 38 parts luminous calcium sulphide. For yellow luminous paint, 48 parts varnish are mixed with 10 parts barium sulphate, 8 parts barium chromate, and 34 parts luminous calcium sulphide. For green luminous paint, 48 parts varnish are mixed with 10 parts prepared barium sulphate, 8 parts barium chromium oxide green, and 34 parts luminus calcium sulphide. A blue luminus paint is prepared from 42 parts varnish, 10.2 parts prepared barium sulphate, 6.4 parts ultramarine blue, 5.4 parts cobalt blue, and 46 parts luminous calcium sulphide. A violet luminous paint is made from 42 parts varnish, 10.2 parts prepared barium sulphate, 2.8 parts ultramarine violet, 9 parts cobaltous arsenate, and 36 parts luminous calcium sulphide. For gray luminous paint, 45 parts of the varnish are mixed with 6 parts prepared barium sulphate, 6 parts prepared calcium carbonate, 0.5 parts ultramarine blue, 6.5 parts gray zinc sulphide. A yellowish brown luminous paint is obtained from 48 parts varnish, 10 parts precipitated barium sulphate, 8 parts auri-pigment, and 34 parts luminous calcium sulphide.

Luminous colors for artists are prepared by using pure East India poppy oil in the same quantity instead of the varnish, and taking particular pains to grind the materials as fine as possible. For luminous oil color paints, equal quantities of pure linseed oil are used in place of the varnish. The linseed oil must be cold-pressed and thickened by heat.—*Building World.*

"**My pet camera**—you know every amateur has its pet—is the Scovill Revolving Back, one of the finest pieces of work I ever saw turned out, either by The American Optical Company or by any other establishment.

"Xanthus Smith,
"Artist and Amateur Photographer,
"Philadelphia, Pa."

"Aristotype" in America.—Collodion and gelatine emulsion papers, which so far, in this country, have not secured more than a moderate share of public favor, appear, in America, to have obtained very great popularity. Their manipulation and treatment form the chief topic of discussion in the photographic papers just now, and the portrait studies which our contemporaries delight to present to their readers are generally printed on aristotype. The competition and rivalry among the makers of the various commercial brands is very keen, which should surely produce a perfect paper in the near future. This rather discounts the qualities of commercial papers at present available.—*Brit. Jour. Photo.*

"Pansy," for September, contains its usual number of short stories, all up to the regular high standard. Its leading stories by "Pansy" (Mrs. G. R. Alden) and Margaret Sidney, move along in that interesting fashion their authors best know how to adopt, promising a satisfactory ending. A paper on Robert Burns contains much by way of valuable hint and suggestion, and will be read with interest by all classes of readers. There are poems, shorter articles and verse, with the popular P. S. Christian Endeavor Corner, so highly prized by young and old alike.

Price $1.00 a year; 10 cents a number. D. Lothrop Co., Publishers, Boston.

FADED PICTURES.

ONLY two patient eyes to stare
Out of the canvas: all the rest,
The warm green gown, the small hands pressed
Light in the lap, the heapy hair.

That must have made the sweet, low brow
So earnest, centuries ago,
When some one saw it change and glow—
All faded. Just the eyes burn now.

I dare say people pass and pass
Before the blistered little frame,
And dingy work, without a name,
Shut in behind its bit of glass.

But I—well, I left Raphael
Just to come drink these eyes of hers,
To think away the stains and blurs,
And make all whole again and well.

Only for tears the head will bow,
Because there on my heart's last wall,
Not one tint left to tell it all,
A picture keeps its eyes, somehow.

William Vaughn Moody, in Scribner's Magazine.

NOT TO BE BLAMED.

"Being a photographer, he naturally asked his daughter to sit to him. I saw one of the photographs, but, strange to say, though the young lady has a very ordinary face, there she was remarkably beautiful."

"Well, the photographer worked on the principle that charity begins at home."

Queries and Answers.

331 PRINTER.—Single sheets of Bradfisch improved aristo paper have been found to stick to each other when taken out of the package, the paper being damp and flabby. I think it unjust to consumers to palm off such imperfect paper. Where is the improvement, I'd like to know?

331 *Answer.*—You must not find fault with the Bradfisch Co., neither with your dealer; more so with your own mismanagement. Gelatine attracts moisture under all circumstances, and if you consider the incessant rains and dampness prevailing in your country for the last three weeks, you will comprehend why gelatine emulsion will stick, unless it is kept carefully wrapped in impervious material and stored away in a perfectly dry room.

332 C. J. LAW.—The focusing scale of my Waterbury detective refuses to turn. It is impossible to change focus from 60 feet to a near distance. What may be the matter with it?

332 *Answer.*—The surfaces of the inner and outer lens barrels are probably worn out, making a uniform sliding up and down impossible. Examine the lens mounting, and if you find what we suggest, interpose between the two barrels a piece of very thin paper, or a piece of transparent celluloid film, without emulsion. Wet the film with plain collodion, when it will adhere to the brass barrel and make it to move uniformly up and down when the focus disc is turned.

333 F. C. C.—I see in THE TIMES an answer to our previous question. Now if we give as you say a proper exposure the prints will come up a brick red which cannot be worked over with crayon, the red shows through the crayon. Now is there any way to fix the developer or the screen, to give proper exposure and get black tones?

333 *Answer.*—We advise to tone these solars with gold after fixing.

334 GRIFFIN COCHRAN.—I am desirous of "taking" the electric light plant of this place while running. What exposure shall I make with Scovill "Wonder" camera, 4 x 5, with Cramer "B" plates? The room is very brilliantly lighted by electricity.

334 *Answer*—With Cramer B plates, the Wonder camera, arc light of from 5000 to 6000 C. P., and paramidophenol developer, you may get correct exposure in from 20 to 30 seconds.

Incandescent light will take a much longer time.

335 LOUIS M.—Can you recommend a good and practical book on Photogrammetry, written in the English language?

335 *Answer.*—"Surveying by the Aid of Photography." By Lieut. A. Reed, U.S.A. Scovill & Adams Co. Price, $2.50.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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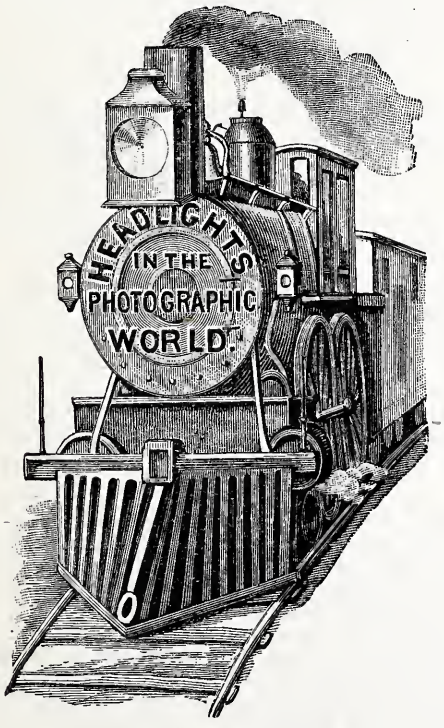
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Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

Business Notices.

WANTED.—August 28, 1891, issue of THE PHOTOGRAPHIC TIMES by Dr. A. C. Mercer, 324 Montgomery Street, Syracuse, N. Y. Will pay 25 cents for it.

FOR SALE.—4 x 5 Gennelli Camera, for making four minette pictures on a plate. Good condition. Price $12. Address G. B., care THE PHOTOGRAPHIC TIMES.

WHO HAS BEST BARGAIN in second-hand 8 x 10 Lens for me? Portrait or View. First-class make only. Write early. Low prices.
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FOR SALE.—One of the oldest and best equipped galleries in the city of Denver, Col.; centrally located, and good prices. Newly refitted up to 18 x 22. Good reasons for selling. Correspondence solicited. Address "PHOTOGRAPHER," care PHOTOGRAPHIC TIMES.

FOR SALE.—A new 4¼ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
Care THE PHOTOGRAPHIC TIMES Office.

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LEFFERTS, care PHOTO TIMES Office.

STOLEN.—On the night, sometime, from August 15 to 16, the following articles were stolen from the Weinig gallery, Third Avenue, near 114th Street, one 11 x 14 Scovill View Camera and three double plate-holders (formerly the property of Emil Wagner, of Brooklyn); one Schnitzer & Co. Rectiscope Lens No. 4, with Rotary Stop; one Scovill Tripod. Should any one hear of these articles, or should they be offered for sale, it is requested that they report to the Editor of THE PHOTOGRAPHIC TIMES, or direct to Mr. Weinig.

PHOTO GALLERY FOR SALE.—A good stand, and can be bought cheap. H. C. RANDOLPH,
Springfield, Tenn.

STOLEN.—From the gallery of E. H. Alley, Toledo, Ohio, a No. 7 Euroscope Lens, new Voigtlander & Sohn make, No. 27578. If presented please inform E. H. ALLEY.

A BARGAIN.—$425 cash will buy my fully equipped gallery; no opposition; good reputation, and portable branch. Buildings and equipments valued at $750; cause, poor health. Address
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WANTED.—To buy for cash, Photo Gallery. Address G. A. S., Box 1914, West Chester, Pa.

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It will pay you to send for it before ordering any goods in the photo line.
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Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.), London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English) Vols. I. and II. (except No. 18), 1890, 1891.

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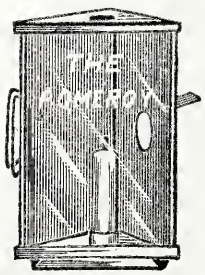
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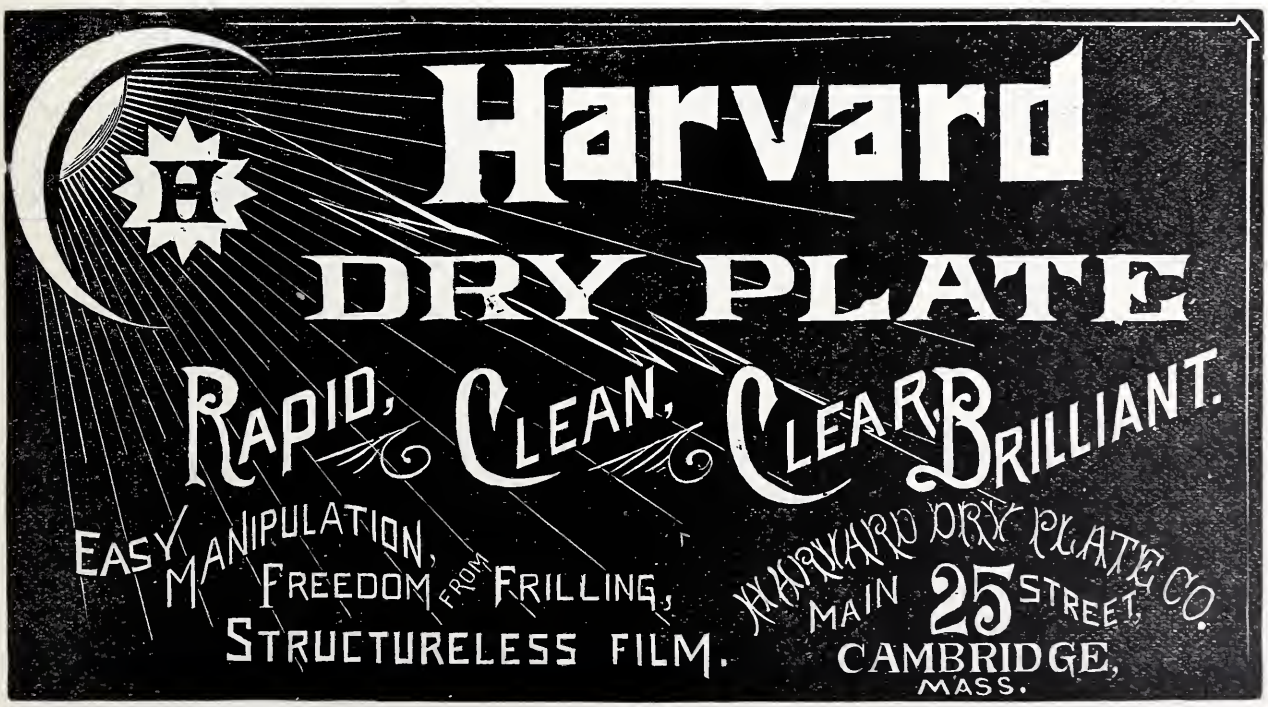
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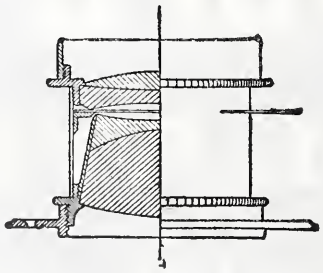
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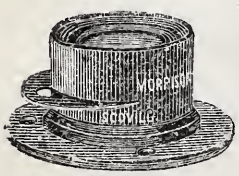
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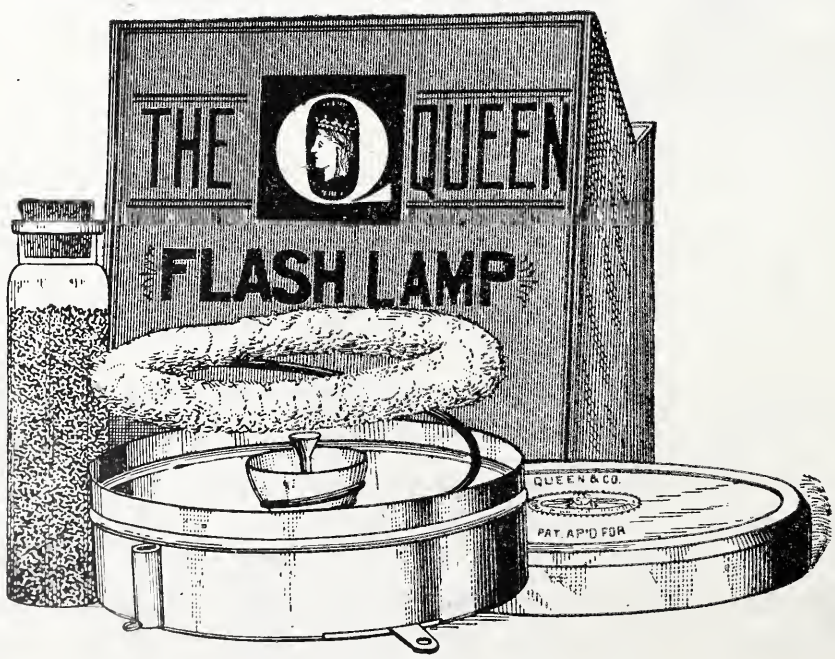
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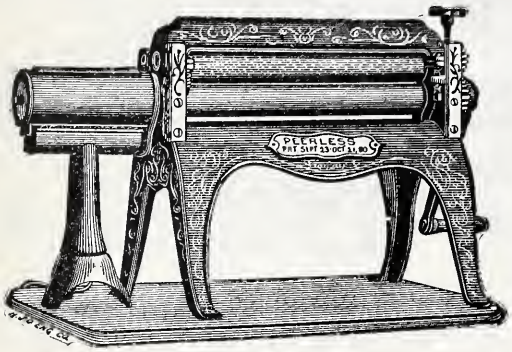
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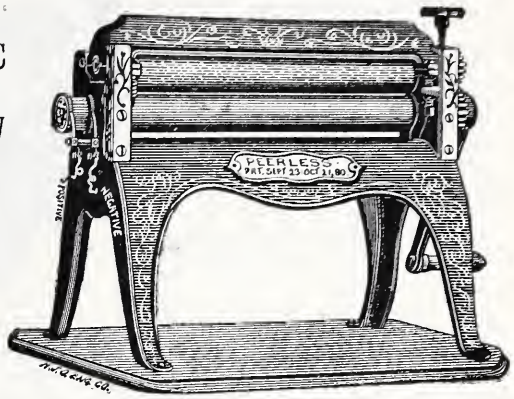
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In ordering our paper from Dealers and Photographic Stock Houses, are advised to order by the name of **OMEGA,** not Aristo or Aristotype, as other brands are then frequently substituted.

There are other papers now manufactured which are claimed by interested parties to be the same or alike our paper.

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NOTE. { Our reduction in Prices.
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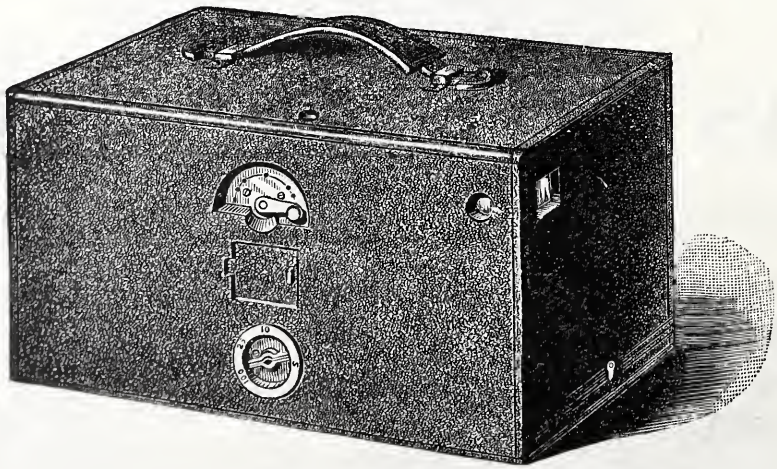
The Bristol

A NEW MAGAZINE CAMERA,

CARRYING TWENTY-FOUR 3¼ x 4¼ FILMS.

(Just the thing for LANTERN SLIDES.)

The Handiest Simplest Most Effective



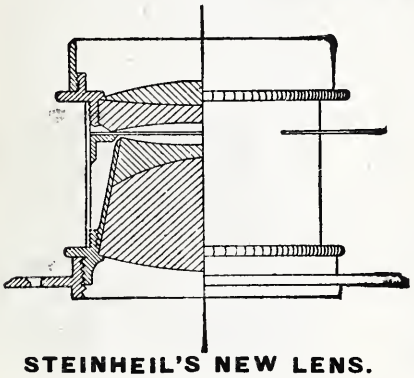
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VERY COMPACT AND EASY TO WORK.——AN EXCELLENT LENS.

Send for a copy of "THE BRISTOL" Manual, which is fully illustrated, and perfectly describes this unique Camera.

THE SCOVILL & ADAMS COMPANY, Manufacturers.

THE UNRIVALED STEINHEIL LENSES.



STEINHEIL'S NEW LENS.

These Lenses not only maintain their old-established reputation, but continue to lead in the field of progress. Made in six different series for every description of work. Special attention is called to

Series No. II, Patent Antiplanatic, the newest conception in rapid lenses. For Instantaneous Portraits, Large Heads, Full Figure Groups, Architecture, and Landscape. A marvel of illumination, depth and rapidity. No Photographer or Amateur should purchase a lens before testing a Steinheil, Series No. II. See accompanying cut.

Series No. III, the famous Aplanatic tube, the illumination of which has been increased, and which is recommended for large Portraits, full-size Figures, Groups, Architecture, and Landscape.

Series No. VI, Wide Angle Aplanat, which has no rival for copying Maps, Charts, Paintings and Engravings. It is the Photo-lithographer's favorite.

Send for Illustrated Catalogue and Price-List to

THE SCOVILL & ADAMS COMPANY.

Edwards's Special Transparency Plates.

For LANTERN SLIDES, Window Transparencies, and Reproductions in Black-and-White.

These Plates make the most perfect Lantern Slides, either by contact printing by artificial light or by means of the camera from larger or smaller negatives and give, at will, either engraving black or rich warm purple tones; they are also specially suitable for reproductions of line subjects for photo-lithography, when used for this purpose with our improved Pyro Transparency Developer, they give any desired density with perfectly bare glass in the high lights.

Price, 3¼x3¼ (English Lantern Size), 75 cts. per doz.

Edwards's Special Pyro Transparency Developer.

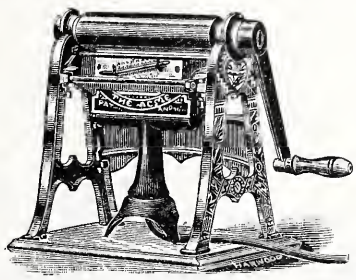
For Lantern Slides and Transparencies.

By means of this new Developer the most perfect Transparencies can be obtained on suitable Dry Plates with the greatest facility. It is the only Developer yet discovered which will produce (on Rapid Gelatine Plates) Lantern Slides of the highest class with RICH WARM TONES and perfectly clear glass in the highest lights.

Price, Two 8-oz. Bottles in Case, $1.50.

B. J. EDWARDS & CO., Manufacturers.

For Sale by THE SCOVILL & ADAMS CO.



PATENT APPLIED FOR.

Acme Amateur Rotary Burnisher.

NOTE.

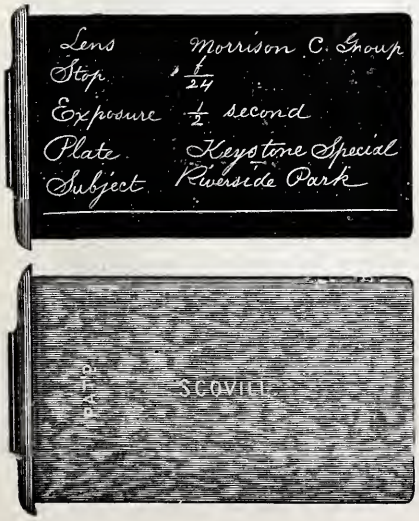
Quickest Heater in the world.
Saves seventy-five per cent. of gas, oil or alcohol.
No sweat, no smoke, no smell.
Acme Horizontal Thermometer attached.
No blistered prints, uniform results.
Will burnish an 8 x 10 and all sizes under.
Simplest Rotary Burnisher ever made.
One-hand wheel adjustment.
Full Nickel Finish.
Guaranteed in every particular.

PRICE, OIL, GAS, OR ALCOHOL, $15.00.

FOR SALE BY ALL DEALERS.

MANUFACTURED BY

ACME BURNISHER CO.,
FULTON, N. Y.



REGISTERING SLIDES.

(PATENTED.)

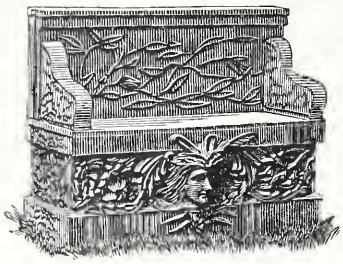
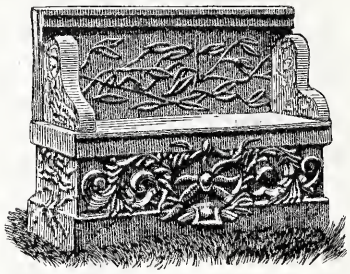
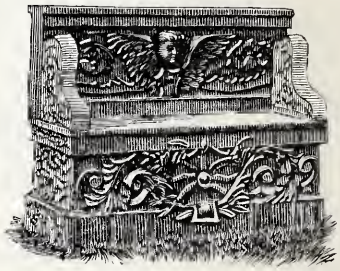
In the pleasure or excitement attendant upon picture-taking, holders slides have been so changed about that the note-book afforded no clue to their identity. All photographers, whether professional or amateur, who have in time past puzzled their brains in the endeavor to solve such vexatious questions as these—

"Have I or have I not exposed that plate?"
"If exposed, was the plate used for that prized picture?"
"Shall I incur the risk of making a double exposure?"

henceforth will have themselves only to find fault with if they do not procure and use in their dry-plate holders the patent registering slides, or as they have been called "Record Slides." These can be written upon with slate or lead pencil *ad libitum*, and the writing erased without injury to them.

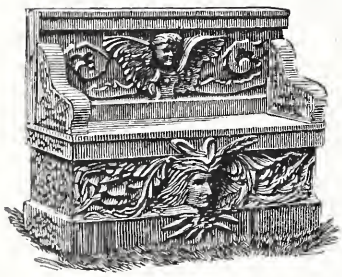
Registering Slides *will be supplied with new American Optical Co.'s Dry Plate Cameras and Amateur Outfits up to* 10x12 *size without addition to price list.*

SOMETHING NEW.

The Eldorado

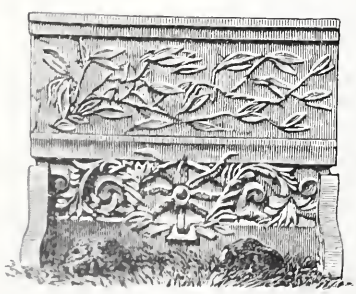
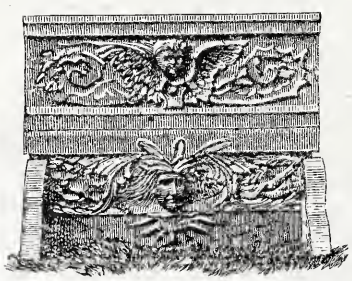
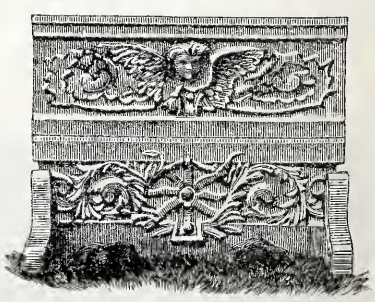
WALL and BENCH COMBINATION.



Makes Eight (8) different Combinations.

PRICE, - - - - $15.



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THE SCOVILL & ADAMS COMPANY,

423 BROOME STREET, NEW YORK.



Patented July 17, 1887.

STAMP PORTRAITS.

These are the only stamp portraits that are gummed and perforated, and being the exact size of ordinary U. S. postage stamps, photographers and others will find them an interesting novelty in advertising their business, as they can be mounted on business and visiting cards, letter-heads, etc.

We also make a size four times larger than the stamp pictures. Send for samples and prices, which will be furnished on application.

Address

H. A. HYATT,
Sole Agent,
N. E. Cor. 8th & Locust Sts.
St. Louis, Mo.

INGLIS & CO.'S

ENLARGEMENTS IN

Black, Sepia and Water Colors,

HAVE A DISTINCTIVE CHARACTER OF THEIR OWN.

Salient points of our Water Colors are faithful retention of likeness, delicacy of coloring and brilliancy of tone.

2637 STATE STREET, Chicago.

SEND FOR PRICE-LIST.

CLEMONS' NEW MATT-SURFACE PAPER.

SOMETHING NEW UNDER THE SUN—A REVOLUTION IN THE ART OF MANUFACTURING.

After many years of scientific research a preparation for the salting of plain photographic paper has been discovered, by which method the finest printing results are obtainable. The advantages are apparent to all.

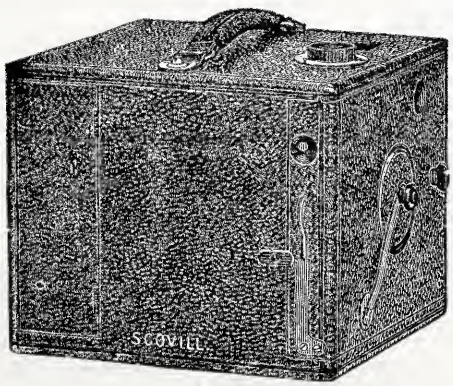
I.—Constant use will not discolor the silver bath.
II.—Will produce the finest detail in printing.
III.—Any desired tone may be obtained from sepia to jet-black with less gold than ever before.
IV.—The "*New Matt-Surface*" paper when sensitized will keep fresh for a long time if properly stored.
V.—The price has not been advanced.

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THE SCOVILL & ADAMS COMPANY,

Sample Sheets, by mail, 10 cents each. 423 Broome St., New York.

THE WATERBURY DETECTIVE CAMERAS.



MANUFACTURED BY THE AMERICAN OPTICAL CO.

Timed and Instantaneous Photographs. This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size, It is

The only Detective Camera made for plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

The Recessed Finder shows *the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

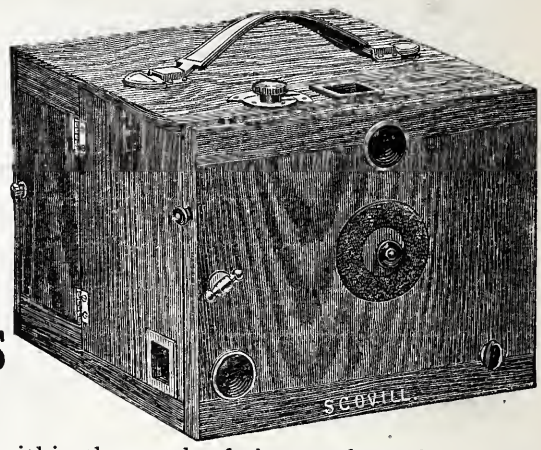
The Focusing Scale is beside the Finder, where it may be readily seen and adjusted.

Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders	$25 00
5 x 7 Waterbury Detective Camera, with 2 Double Holders	40 00

FOR SALE BY ALL DEALERS.

IMPROVED KNACK DETECTIVE CAMERAS



To MEET the demand for a cheap Detective Camera within the reach of the youth, and of those who want to make but a moderate investment in photographic appliances, we have introduced the KNACK CAMERA, which is certainly lighter and more compact than any other cheap detective camera in the market, and what is still more important, has a much more expensive and more perfect lens.

This Double Combination Instantaneous Lens, with Interchangeable Stops, when bought separately costs as much as the whole camera.

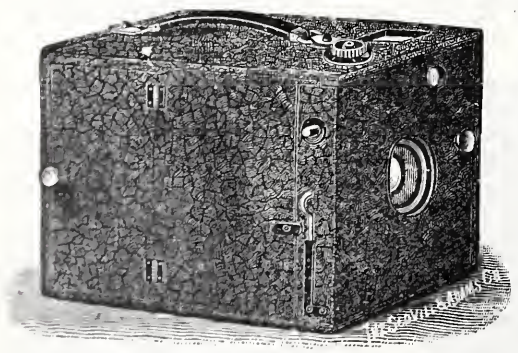
The whole front of this camera is hinged, which is a great convenience. The camera has a Recessed Finder, an Instantaneous and Time Shutter with Speed Regulator, Cap for timed exposures, and one Double Dry Plate Holder.

	PRICE.
No. 1 4x5 Antique Oak, Knack Camera,	**$15.00**
No. 2, " Leather Covered, " "	**17.50**

MANUFACTURED BY THE SCOVILL & ADAMS CO.

FOR SALE BY PHOTOGRAPHIC MERCHANTS.

THE TRIAD CAMERAS.



When a discovery in photography is announced, it is claimed that the new article will displace everything then in use. These claims are seldom justified. There is generally found a place for the new article, if it has any value, and for the old as well.

For commercial purposes, for instance, such as the reproduction of photographs for illustration, it has been demonstrated that collodion "wet" plates are better than dry plates. For the use of the amateur, on the other hand, dry plates are much better than wet plates. Though many new supports have been tried, the sale of glass dry plates is larger now than ever before. Where only a few pictures are to be made on one day's outing it is likely that the experienced photographer will always use dry plates or cut films.

If he is going away for a summer vacation, or for a trip abroad, and expecting to to make a large number of pictures, he will procure a roll-holder loaded with continuous films. This will save him the bother of developing while he is away from home, and of changing plates; but he cannot well know what results he has secured until he has exposed the entire roll and has had it developed

For those who want to use celluloid instead of glass plates, and are not willing to trust to good luck in the exposure of the complete roll of film, we offer with the "TRIAD" camera a *double* film holder which is very light. If the amateur carries six of these holders (loaded with twelve films) he is well supplied for one day · that is, if he is prudent and aims to get only really good pictures. At night, either in a photographic studio or in his own hotel room, the exposed films may be put away into safe receptacles, and another lot of unexposed films substituted for them.

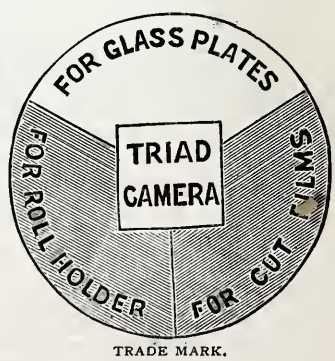
The TRIAD Camera is fitted with the latest improved Roll-Holder for continuous films, two double holders for glass plates, or two double film holders, if the latter are preferred.

This Camera is fitted with an Instantaneous Rapid Group Lens with easily interchangeable diaphragms —the most satisfactory detective camera lens ever made. It has a finder so constructed that the image is the same as that on the ground glass, though of course it is proportionately diminished in size. Usually the finder in a Detective Camera shows simply the image on the plate, but not its relative size and proportions. The Instantaneous Shutter in this camera is provided with a speed adjuster which works from the outside, and the focusing device and scale are conveniently near the finder. This is very important when one is trying to photograph rapidly moving objects.

For timed exposures use a tripod (easily adjusted to the camera by the plate underneath), open the door at the back, so that the image on the ground glass can be easily seen, set the shutter with the opening opposite the lens, and bring into use the felt cap which fits the opening in front of the camera. By complying with these simple requirements you have a complete camera for timed exposures.

	Price complete.	Price without Roll-Holder.
4 x 5 Triad Camera, with Roll-Holder, two Double Dry Plate Holders, or two Cut Film Holders	$35 00	$25 00
Extra 4 x 5 Triad Double Dry Plate Holders		1 25

Holders for Cut Films, same prices as above.



TRADE MARK.

For sale by all dealers in Photographic Materials and the Manufacturers,

THE SCOVILL & ADAMS CO.

AMATEURS, ATTENTION!



Please remember that in speed and every desirable optical quality no lenses yet constructed can rival

Voigtländer's Euryscope Lenses,

which are made in SEVEN different styles.

BENJ. FRENCH & CO.,

319 Washington St. BOSTON, MASS.

Revised price-List sent on application.

Correspondence solicited.

NEW YORK PHOTOGRAVURE CO.,

NO. 137 WEST 23D STREET, N Y.

PHOTOGRAVURE.
PHOTOGELATINE.
HALF-TONE. . .

ERNEST EDWARDS, PRESIDENT. Inventor of the Heliotype Process. Manager, Heliotype Printing Co., Boston, from 1872 to 1886.

W. R. STANBERY, SECRETARY.

"SUN AND SHADE," an Artistic Periodical.

ART DIRECTOR, A. V. S. ANTHONY, for many years Art Director for Ticknor & Fields, and Fields, Osgood & Co.

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"The highest level of achievement in photogravure work."—THE WORLD, New York.
"Photogravures of the highest quality."—THE HERALD, New York.
"Possessing the quality of drawing in India Ink or Sepia."—THE SUN, New York.



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ECLIPSE ALBUM.

PRICE LIST.

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No. 1	6 x 7	cards	$2 25
No. 2	7 x 10	"	2 50
No. 2½	10 x 7¼	" upright	3 50
No. 3	10 x 12	"	3 75
No. 3½	12 x 10	" upright	4 25
No. 4	11 x 14	"	4 25
No. 5	14 x 17	"	7 00

Nos. 1, 2, 2½, 3, 3½ and 4 are handsomely finished in Morocco, half leather bound, with gilt title, and enclosed in a neat box. No. 5 is extra gold finish.

For sale by

THE SCOVILL & ADAMS COMPANY,

423 Broome Street, New York.

THE 5 x 7 HENRY CLAY
Stereoscopic Camera
FOR TRIPOD AND HAND USE.



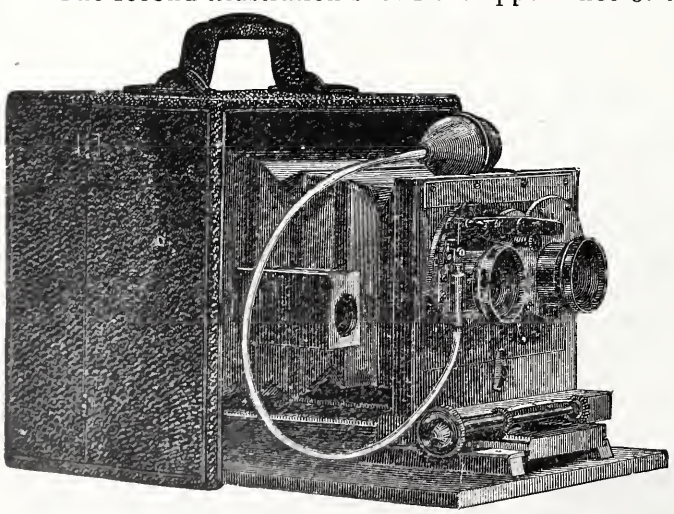
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

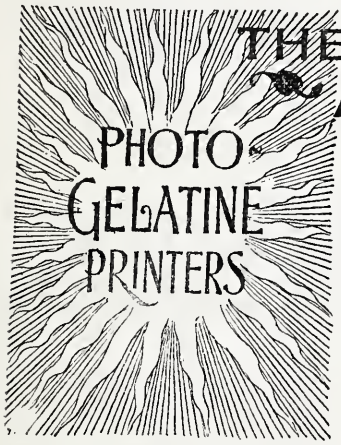
PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release,** $75.00

This camera can also be made with vertical sliding and swing front. By means of the former the proportion of sky and foreground may be adjusted; the latter permits the taking of subjects which may be either above or below the level of the camera and still preserve the lines vertical.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, and with vertical sliding and swing front,** . $80.00

A 5x7 Roll Holder for Transparent Films can be furnished with either of the above forms of this camera for $15.00 additional. This addition would make the case about two inches wider and one-quarter inch higher.

THE SCOVILL & ADAMS CO., 423 Broome Street, New York.



THE ALBERTYPE COMPANY
67 & 69 SPRING ST., NEW YORK.

VIEWS

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WRITE FOR PARTICULARS.

"THE CHIP IS STILL ON OUR SHOULDER."

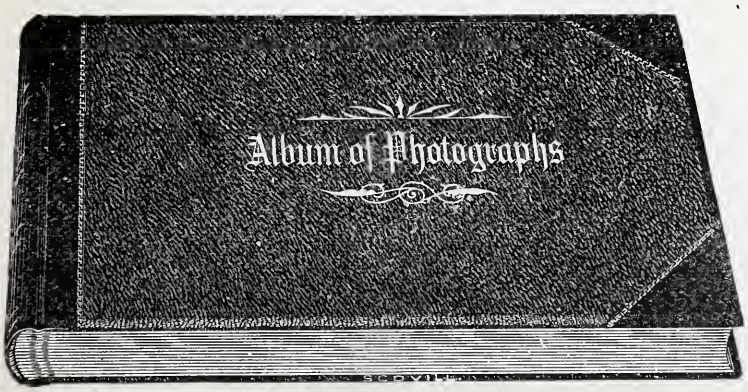
The **Triplex Shutter,** *although exactly the same as when introduced over three years ago, more than holds its own against all newcomers; and its old competitors many times improved.*

None can! None dare! stand before it in a competition, such as the one in which, in 1886, a **Prosch Shutter** *was declared* **the best Shutter in the market.**

Prosch Shutters. **Prosch Storage Flash Lamps.**

Send for Circulars and information.

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Plain..... With Gilt Lines..	$1.25 1.25	$1.50	$2.25	$2.50	$5.00

Each album has 48 pages, 24 leaves. In them the finest card-board only is used, chemically free from anything that could injure a print.

JAMES SWIFT & SON'S

(LONDON, ENGLAND)

PARAGON LENSES.

We take great pleasure in announcing to American Photographers that henceforth we shall be enabled to supply them with JAMES SWIFT & SON'S PARAGON LENSES.

The reputation of these Lenses abroad is superior to that of any other make. They have been selected by the following named institutions because of their unequaled qualities and excellence.

The Scientific Department of the English Government in England, Calcutta and Bengal.

The Universities of Oxford and Cambridge, King's College and Edinburgh University College Schools.

Owens College, Manchester, besides the Governments of France, Germany and Italy.

The SWIFT LENSES have been awarded no less than seven gold medals, besides numerous diplomas of honor.

They are manufactured from the new ABBE-SCHOTT glass, which is undoubtedly more uniform in quality and specific gravity than the best optical flint and crown glass heretofore made ; hence the lenses are of a uniformly superior quality.

The Rapid and Portable Paragon Lenses

Are supplied with Iris Diaphragms and mounted in brass as well as aluminum; while the WIDE-ANGLE PARAGON LENSES are fitted Revolving Diaphragms.

THE SCOVILL & ADAMS CO.,

SOLE AGENTS IN AMERICA,

423 BROOME STREET, NEW YORK.

Catalogues of SWIFT LENSES supplied free on application.

Remember

THAT

"Three Crown"

Albumen Paper

Is absolutely the BEST.

WHY?

Because none but the Best of the Rives Paper is selected for Albumenizing the THREE CROWN BRAND.

It is therefore free from the imperfections often to be found in other brands, which arise from imperfections in the plain paper and cannot thus be avoided.

Look out for imitations of

WATERBURY CARDBOARD.



Look out for the genuine, too, and see that you get it.

It is the Best and Cheapest.

The Photographic Appetite increases by what it feeds on. The beginner is usually content to start with a modest outfit, but as interest grows the hunger for more artistic results calls for better facilities so that the apparatus must constantly be of a more improved pattern and contain all the latest fixings, till finally the question of improvement is entirely one of the value of the lens.

The Rattler, $5.

—

The Advill, $20.

—

The Waterbury, $25.

—

The Bristol, $30.

—

The Triad, $35.

—

The Henry Clay, $55.

—

Stereoscopic, (Henry Clay) $75.

To suit this growing appetite we make a line of camera boxes unequalled for workmanship and convenient appliances. We can supply any stage of hunger and make to order to suit any whim. Any photographic question cheerfully answered. Send for our Catalogue.

The Scovill & Adams Co.,

423 Broome Street, New York.

ISSUED EVERY FRIDAY.

VOL. XXII. SEPTEMBER 16, 1892. NO. 574

FIVE DOLLARS PER ANNUM. SINGLE COPIES, FIFTEEN CENTS.

THE PHOTOGRAPHIC TIMES.

AND

AMERICAN PHOTOGRAPHER.

A WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

ILLUSTRATED

NEW YORK.

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION.

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By J. A. BARHYDT.

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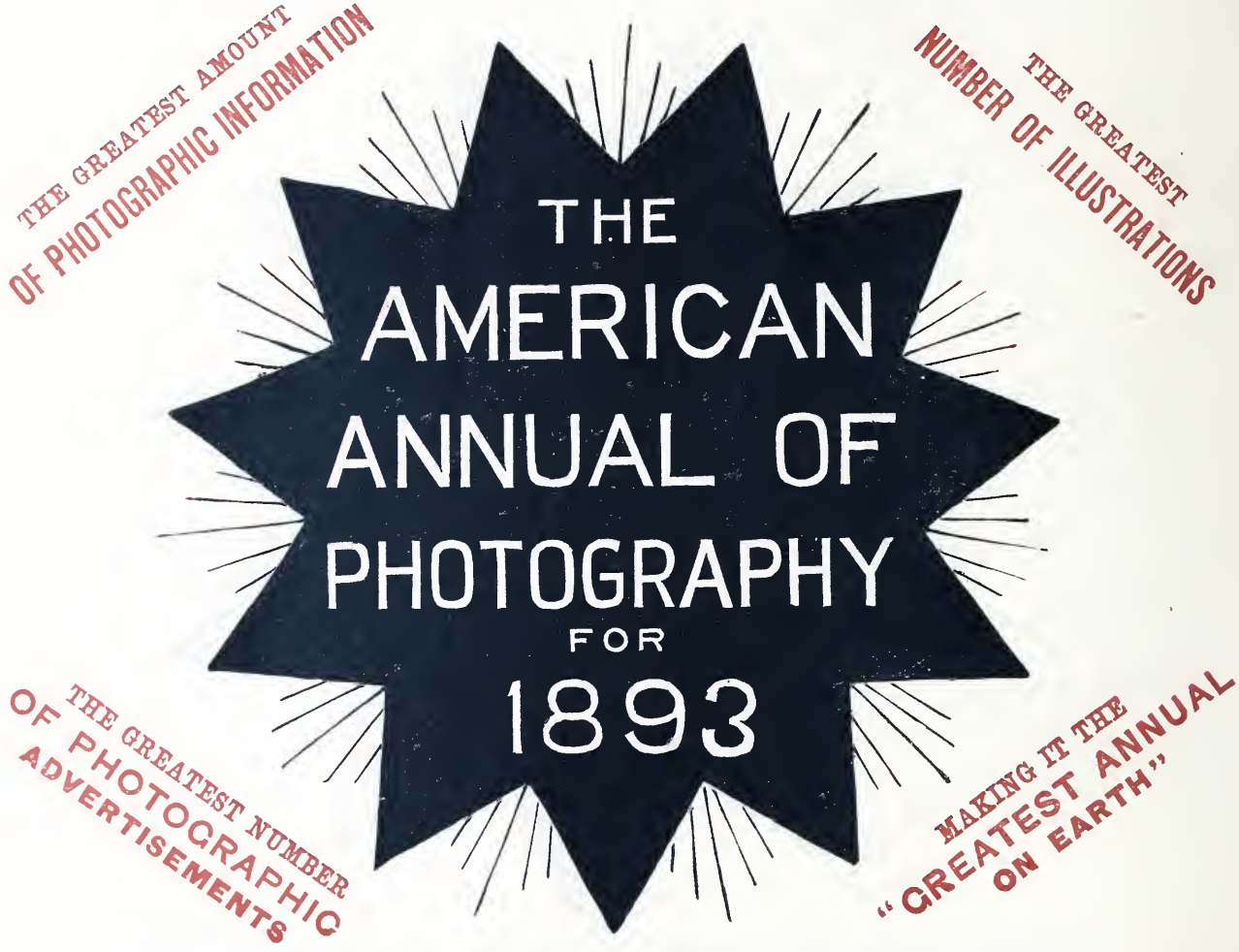
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S. W. Burnham, Photo.

F. Gutekunst, Engr.

A VIEW FROM MOUNT HAMILTON

THE PHOTOGRAPHIC TIMES.

VOL. XXII. SEPTEMBER 16, 1892. No. 574.

A VIEW FROM MOUNT HAMILTON.

THE accompanying phototype is from a negative by Mr. S. W. Burnham, formerly of the Lick Observatory, on Mount Hamilton, and represents a view from Mount Hamilton, looking over the neighboring cloud-crowned summits. The picture is an impressive one, and preserves the effect of nature to a wonderful degree. The clouds, which really appear as mist when near by, obscure the scene, and make difficult a good photographic reproduction. But Mr. Gutekunst has succeeded remarkably well under the circumstances, in doing Mr. Burnham's excellent negative justice. The accompanying article by Mr. Burnham will be read in connection with this picture with the greater interest.

S. W. BURNHAM.

OUR biographical sketch and portrait this week is of Prof. S. W. Burnham, of the Lick Observatory, on Mount Hamilton. Prof. Burnham has long been known to our readers; but the following sketch, being written by himself, will be read with all the more interest by them.

He writes:

I am unable to assign any valid reason for writing this article, at least nothing better than a desire to comply as far as possible with any request which comes from my friend, the editor of THE PHOTOGRAPHIC TIMES. I do not recall anything in my career, which unfortunately for this purpose is much longer than it is wide, likely to be of special interest to any one else. I have no reason to think that any considerable number of American palaces, or even lowly cottages, would be rendered brighter by an output of autobiographical facts, and certainly the children do not cry for it. But I will not undertake to sound the depths of the mighty editorial "we." *They* should know what he wants better than any single-breasted outsider, even when he has a more intimate acquaintance with his subject. At any rate the man with the scissors has the final veto power, and with the aid of a blue pencil, and a convenient waste basket, he can stand between the wrriter and the reader, and protect the helpless when worst comes to worst. Perhaps these preliminary remarks do not form an essential part of the usual sketch of one's life and labors, but when the items of interest are few and far between, it may be allowable to build a superstructure more or less of other material.

To make a beginning, it may be as well to mention that I first saw the light in the year of our Lord—but this is rather a delicate and somewhat personal matter, and instead of giving the figures, because figures according to a high authority will lie sometimes, perhaps it will be enough to say that it was a long time ago; and then besides that, although the writer must have been present, his statement concerning the facts would be in the nature of secondary evidence, and everybody knows that proof of that kind is incompetent until all original sources of information have been exhausted. However, there is no objection to adding that according to the best authenticated traditions this event occurred a little more than half a century ago. It would be doubtless interesting in this connection to trace the rapid strides of civilization, and the wonderful progress of the arts and sciences during this time, and to point out these and other singular coincidences, but space forbids, and one must not trespass too much even on the patience of an editor.

My distinguished friend, Dr. Lewis Swift, the eminent astronomer of the Warner Observatory, was wiser than most of us. With the foresight which has since led him to make many important discoveries, he selected the twenty-ninth day of February for his birth-day, and he is now about to celebrate the eighteenth anniversary of that occurrence. The consequence is that he feels as

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young and active as ever, and we all wish him many happy returns of the day, but he will never catch up at this rate.

The event to which I have alluded as having occurred so early in my career, was attended, so far as I can learn with no unusual manifestations. I should have said that this happened in that most New England of all the New England States, Vermont, famed in history and song for various things too numerous to mention here, beyond a brief allusion to men, horses, and maple sugar. The bells on this occasion were not rung in joyous peals, possibly because there were no bells, except cow-bells, in that latitude. Nor were there any floral displays, which is not strange, considering that in December the snow should have been at least three feet deep. It is not unlikely that about this time, and shortly thereafter, fond relatives may have made some flattering predictions concerning the future greatness of the infant prodigy ; and it is not impossible that a future position at the White House may have been alluded to with some confidence. It is perhaps unnecessary to say that the latter part of the prophecy has not yet been verified.

This biographical sketch might well end here. There is nothing more to add, or if there is anything, as Mr. Toots would say, "its of no consequence." It occurs to me, however, that to ensure the safe passage of this article through the editorial ordeal, I should say something about photographic matters, particularly as this is a journal devoted to that subject.

In a preliminary way it may be remarked that I have always entertained very hospitable feelings towards divers kinds of hobbies ; and one or more were always in condition to be ridden. Looking back at these things in a sort of judicial way, I am not certain that some of the time I did not do considerable walking after all, and let the other fellow ride ; but however this may be, our relations were always of a very friendly character, and I do not know that I have anything to regret.

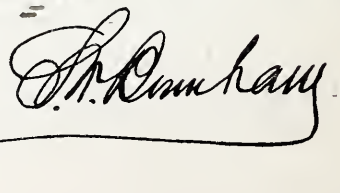
My connection with matters photographic commences with the introduction of the commercial dry-plate. My first camera was obtained in 1881 of Walker. This carried a plate something smaller than the lantern-slide size. We used then plates made at Chicago by Beebe, now of Denver. After awhile their manufacture was suspended, and then came the Rockford plate, made by Taylor & Green, of Rockford, Ill. This was an excellent plate, though of course much slower than the plates now in general use. These plates made as fine negatives as any plates of more recent date, and for lantern-slide purposes they were admirable. I have never made or seen any more brilliant and perfect lantern slides than some of those which I still have, made on the Rockford plate, and developed with the old pyro and ammonia developer.

The little camera spoken of gradually developed into a 4 x 5, and that finally, by a similar process of evolution, blossomed into a 5 x 7, the Scovill St. Louis box. I have drawn the line at this size, in view of the question of transportation on long tramps. A Blair 8 x 10 extension, however, makes the camera serviceable for pictures of that size whenever they are wanted. A Laverne lens of about 9 inches focus, fitted with an Iris diaphragm, and a Newman shutter, supplies every demand for outside and indoor work.

During the past ten years I presume I have done my share in the way of encouraging the business of dry-plate making. At all events, I am very glad to be in total ignorance of the quantity of plates consumed in one way and another. Probably a fine showing could be made by a follower of Mr. Gradgrind, as to the immense value to the human family of a different application of this time and money, all of which might be true from that standpoint ; at the same time I know of no diversion productive of more enjoyment for a corresponding outlay. In addition to this, the use of the camera has become more or less of a practical necessity to almost every one who has mastered the problem of making a good negative.

I believe there is nothing more to add to make this sketch complete. It might have been longer, and therefore less valuable as well as less readable. It might have been written in the third person, in the usual way, and filled with highly complimentary allusions, showing a continuous and unbroken series of great accomplishments. It might not have been written at all, and perhaps that would have been better still.





ON THE USE OF THE ALKALIES IN DEVELOPING SOLUTIONS.

In chemical actions the behavior of the hydroxides and carbonates of the alkali-metals are well defined. They can replace each other in certain proportions which are called equivalent, giving rise to similar products; thus, 40 parts of caustic soda can replace 56 parts of caustic potassa, or 24 parts of caustic lithia, and *vice versa*.

Likewise 69 parts of potassium carbonate, 53 parts of sodium carbonate, and 32 parts of lithium carbonate are equivalents.

And the caustic alkalies are equivalent to the carbonates in the proportions above given, for example: 56 parts of caustic potassa neutralize 36.5 parts of hydrochloric acid, and can be replaced by 53 parts of sodium carbonate or 32 parts of lithium carbonate, and in every case the acid will be completely neutralized.

But it would be a great error to think that the hydrates and the carbonates in question can be substituted, equivalent for equivalent and one for another, in developing solutions, and that every hydrate and every carbonate acts with the same energy.

In chemical actions caustic potassa behaves more energetically than caustic soda, and the same difference of action is found between the carbonates. Furthermore, as it should be expected, the hydrates act with a much greater energy than the carbonates. In photography the same difference of activity is observed.

In developing solutions the hydrates and the carbonates do not and are not employed to form compounds, though they unite with certain reducing agents, pyrogallol, for example, to form a compound termed pyrogallate, or isolate the reducing agent as in the case of paramidophenol hydrochlorate by combining with the hydrochloric acid. Their real action, that for which they are employed, is to increase the affinity of the reducing agent for oxygen, and, consequently, the energy of the same. They exert besides a certain important action on the photo-film which they predispose to be more easily acted on by the developer on the parts impressed by light.

From this it is evident—and it is a fact known by every experienced photographer—that the quantity of hydrate, or carbonate, which can be employed to compound a developer depends on the exposure time, that is, of the more or less unstable equilibrium of the silver salt molecules forming the latent image, and that the alkalies cannot replace each other equivalent for equivalent by reason of their different energy of action; to replace a carbonate by its equivalent of a hydrate would surely spoil the plate by producing a reduction of the whole film, etc. Example, the following formula of a developer for short exposure time:

Hydroquinone	5 grains
Sodium sulphite	15 grains
Potassium carbonate	12 grains
Potassium bromide, sol. 1: 10	2 to 4 minims
Water	1 ounce

As it is seen this compound contains 12 grains of potassium carbonate; if this quantity were replaced by an equivalent proportion of caustic potassa, *i.e.*, nearly 10 grains, the picture would fog immediately, blisters would occur, etc.; 4 grains of the hydrate is about the maximum which can be employed. However, 25 or 30 grains of sodium carbonate could be substituted, which is a good deal more than the quantivalence, but this carbonate acts with less energy than the corresponding salt of potassium.

A pyrogallol developer which in some exceptional cases admits as much as 5 per cent. of potassium carbonate, cannot be managed if compounded with the hydrates, except in very small quantities; caustic ammonia is in fact the only hydrate which can be employed with safety, and still it requires the presence of a bromide not to produce fogging.

Hence—and that is the object of this article—one working with a developer holding all the necessary products, cannot substitute an alkali for another in equivalent proportions.

OPEN AND SHUT.

Some photographers seem to think that the question of shutters is settled when they have one which will open and shut in the space of any fraction of a second from the one five-hundredth to the fifth, no matter what the mechanism or the action, so long as it is between the lenses of the combination. But the matter is not by any means so simple. The form of the shutter and the position of it are both to a certain degree influenced by the character of the lens and the kind of result we are in search of. In the old form of lens, the doublet, Petzval, Steinheil or similar, we are perfectly suited with a shutter that works between the components, opening from the centre and closing to it, because the action of the shutter is the same as that of a diaphragm, and the image is only changed by being more sharply defined at the beginning and end of the exposure, than at the middle of it. There is a loss of time, but this is inevitable; if the definition is to be perfect in any part of the field, the aperture

must be central and the gain in definition compensates for the loss of light, where this is of importance. The action of a shutter which passes through the tube, in the central space, *i.e.*, from side to side between the lenses, must always give a defective definition, as in the case of the revolving discs which have the aperture pass from side to side. If you want evidence of this, focus your lens with a revolving diaphragm, with the opening half-way across, and you will find that the image is more or less diffused, but as, in the passage, the diffusion at the beginning is in one direction and at the end in the other, the result is a correction in the nature of a very slight general diffusion, pictorially of slight importance, but always existing. A shutter that is always central in its illumination is therefore always correct, and the illumination is more equal than in any other form, but practically, as I have pointed out in a former article, the exposure required is that for an aperture half the diameter of that which the shutter provides. Nor is there, so far as I can see, any help for this. A central stop must open and shut, the actual opening changing from the infinitesimally small to the full opening and back again ; a central shutter which acts from side to side produces a slight confusion of the image at the beginning and at the end of the exposure ; the rise-and-fall shutters in the centre of the combination give an unequal exposure as well, and not always with the inequality where it is available, so that on the whole the iris form of opening is the most conformed to theory, though two movements are necessary and the highest speed is not attainable, should it be required. Nobody, so far as I know has tried the form of shutter which might be called the "Eyelid," opening and shutting like the eye, which would have certain advantages for certain cases. I suggest it, if not out yet, to an inventor who has time to work it out mechanically, which I have not.

But the action of a shutter which presents a passing aperture, behind or in front of the lens, has yet to be considered. One that opens and shuts from the centre, when put before the lens exagerates the tendency to central illumination which all lenses, and especially the double combinations, have, and, while offering the objections which obtain to the iris form when placed between the components, it does not give the compensation of improving definition. These in whatever form are exceedingly convenient for time exposures and on account of their applicability to any lens for the moment, interfering with nothing, but the falling off of the illumination to the margin of the field, which they cause, is a serious objection. This may be reduced to a minimum by using a shutter which opens much wider than is needed, so that the exposure is made from the middle of the movement, but absolute equality of illumination cannot be given by any shutter which opens and shuts, either from the centre or from one side, in front of the lens. A slit passing across the field and exposing it from side to side, or from bottom to top, is capable of giving all the equality of illumination which the lens permits. This is the guillotine action, whether it be from the side or from the top. The introduction of the Jena-glass lenses gives a new value to this form of shutter, for as there is no curvature of the field, but the sharpness is maintained over the entire expanse of any given plane, the sharpening of the pencil by the central shutter which was useful in the old form of lens, is here useless except for increasing the depth of focus, and even this is not so serious a difficulty as in the old lenses, the depth of focus being much greater. As the diminution of the aperture brings no such advantage in the new lens as it did in the old, there is no such compensation in the action of the iris stop between the lenses, and a positive disadvantage in the use of one in front of or behind them. The shutter indicated by the theory of the new lens is one which gives an exposure of the full width of the plate, passing from side to side in front or behind the lenses and giving the full illumination afforded by the lens, to each portion of the film in succession. This is on the hypothesis that the exposure is what is known as "instantaneous" or as short as is practicable, but in the case of an exposure of an appreciable interval, in which the time occupied in opening and closing the shutter is no considerable part of the whole, the iris form is satisfactory in its action. The action of the guillotine shutter gives the full power of the lens on each part of the sensitive film for a definite time, and as this only requires a minimum exposure it is clear that the action is that which allows the shortest exposure possible to be given with full effect, and it is the only one which meets the highest demand for instantaneous work, the absolutely plane field of the Jena-glass lenses giving it an additional advantage. I hope, therefore, that the Jena combinations will give us some higher results in very rapid work than any yet attained, and I look foward to experimenting with the "Rapid" Zeiss form of lens with anticipation of new pleasure, hoping to see work on a larger scale than other hitherto executed, with that equality of definition over the whole field characteristic of the new glass in other results attained by its means.

W. J. Stillman.

PICTORIAL SELECTION IN PHOTOGRAPHY.

(*Continued from page* 564.)

Breadth.

Remember that simplicity of construction, combined with masses of light and shade, agreeably disposed, are the requisites necessary to give a picture dignity and repose. Therefore, although it is most desirable to have variety and contrast in the lines of your composition, it is highly important that these values be carried to no great excess. An outline, well diversified in a natural manner, will always be more pleasing to the eye than a repetition of lines without variety; for the sight is as soon fatigued with monotony and repetition of forms as the ear is with the continued recurrence of the same sounds. The rounded forms of the clouds will contrast with the angular forms of the mountain, and these, in their turn, with the horizontal lines of water; but it is the breaking up of these masses I would particularly wish you to guard against, always bearing in mind it denotes greater talent in those who can "simplify," rather than in those who "cut up" or complicate their productions. For instance, see that your distance is not "broken up" by, say, an open row of trees cutting across it on to the sky line, thus rendering patches of distance as seen between the trees as patches also of the trees themselves. Get to some other position, in which you can either command the distant prospect without the interruption of the trees, say, above them, or else go closer to them, in order that you may get a view between them, and thus overcome the difficulty.

Hundreds of otherwise good pictures are quite spoiled through lacking this great quality of "unity" or breadth, whilst those of a very low order excel, in the minds of the vulgar, in its very violation.

Let me give you an example of one of these latter. A little piece of rock here, or a tiny bush there, two stones placed together and another not far off. A winding road which leads to nowhere, cropping up at unexpected intervals, serves to offer some foundation for travellers who are seen to keep a most regular and respectful distance from each other. A little to the right is a placid stream of water, with a wonderful lot of rushes of isolated growth and "pot-hook" form. A man in a boat adds life to this portion, whilst a bridge, at no remote distance, affords a vantage ground for one on fishing boat. It would be hard for these poor souls to be far away from any source of refreshment, so a kindly hand erects an inn, and finds a landlord too. You have often seen him. He is most generally to be observed at the door, whilst his wife leans out at the window. Two cows in marching order, single file, one red the other white, go, together with a black horse, to complete the list of all the bodies terrestrial. The prospect beyond is of great variety; heathery moors and glowing fields, rocks of quaint geological formation, and cascades past conception to the ordinary human mind; but at last they are all merged into the distance, and find repose in the "blues."

We have seen, thus far, the most agreeable situation for the "horizon," the position of the point of sight, the tendency of the general lines, the disposition of the masses, and the desirability of maintaining "breadth" to the exclusion of "spottiness" in our pictures. We must now consider the balance of parts, or the relatlon which one or more masses bear to others in the composition.

Balance of Parts.

A balance of parts does not necessarily mean that equal quantities of the subject should be placed on each side of the picture. We have already noticed this unsatisfactory effect in the view of the roadway as seen from a central position. A great preponderance of your subject may exist on one side, and yet be sufficiently balanced on the other by a group of figures, an object, or a mass of either light or shade. Indeed, it is common, in most landscape compositions, to place a greater mass on one side or the other, allowing it to slope into the distance, the mass being balanced, say, if in a harbor, by "shipping," or, in the case of a roadway, by "animals or figures," the shipping, animals, or figures, *always* holding a secondary position in reference to the amount of space they occupy.

Not only is this arrangement more pleasing in its lines, but it is decidedly more picturesque in the irregularity of its parts. Another very general and agreeable composition is that in which the greatest mass is allowed to take a position a little to either right or left of the centre, sloping towards the sides, the objects which balance it being placed in close proximity.

In the infinite variety of aspect in which nature is presented to us, it is obvious no code of rules could be formulated to adequately suit all circumstances, so that one's own personal judgment must be largely relied upon for selection and arrangement, and, in proportion to the artistic knowledge we possess, so will depend the success or otherwise of our productions.

STRONG LIGHTS.

It must be remembered that brilliant light and strength of tone act in a powerful manner on composition. A very small quantity of black and white in violent contrast will require a large amount of middle or half-tone to subdue it and preserve the harmony of the whole.

You will allow me to suggest, when photographing from nature, the necessity of bearing in mind those colors which are likely to give these strong contrasts when reduced to black and white, in order that you may make due allowance for their balance in your composition. I am told it is an excellent plan to use a piece of cobalt-blue glass when selecting a subject, as the tones can more readily be estimated by this means rather than on the ground-glass.

CHIEF POINT.

Do not forget there should be a *chief point* of interest in every picture which should at once arrest the eye, and in relation to which all other points must be held subordinate. Where this "chief point" should be situated depends very much on the character of the subject chosen, but some points in a landscape are so obviously well suited for this purpose that they should at once be selected and decided upon. In historical or *genre* pictures the chief point of interest is not unfrequently placed in or near the centre, but it is by no means essential it should occupy that position alone.

Having now determined your "chief point," you will arrange the residue of your subject in such a manner as shall keep up the interest of the whole, and present to the eye an agreeable composition. One object should never be placed over another when that other is of equal size or effect, as this, by dividing the interest, would destroy the power of both. For the same reason two objects of the same size and interest should never be placed so as to appear one on either side of a middle object. One most be rendered subservient to the other to overcome this deteriorating effect.

PROPORTIONS.

The proportions of pictures may vary with the general forms of the subject selected, but they should never be exactly square. The effect of height is often aided by an upright form, but its height should be evidently more than its width. For landscapes an oblong form is most desirable, varying in length as the prospect demands.

W. D. G.

(*To be continued.*)

DEFICIENCIES IN THE TRAINING OF PHOTOGRAPHERS.

[Read before the Photographic Convention of the United Kingdom.]

EARLY GUIDANCE.

When it is known in the early life of a lad that he will probably become a photographer, his training should commence during the latter years of his school life. His studies can then be guided in directions which in after-years will be directly useful to him in his professional capacity, and he will acquire knowledge readily that may later save him much labor and effort.

Where this has been done it will be generally found that the directing parent is a photographer, or connected with photography, and in such cases the same forethought which has guided these early studies into useful channels has probably continued their direction to a successful *dénouement*.

IMPORTANCE OF CONTINUITY.

But the majority of those who become photographers have their career decided after leaving school—sometimes a good many years afterwards, and it is to these my remarks more especially apply.

We may suppose a lad has left school, and not until he has subsequently spent a year or more in holiday-making is the important decision made as to what his life's work shall be, and steps are taken to start him on his career.

Now, while the whole of our sympathies may go to aid the lad's pleasures in the heyday of his youth, the stern competition of life enforces the doctrine that this, the most valuable portion of his life from an educational standpoint, must be utilized to the utmost, and in doing this there is no need to deprive him of his pleasures, but they must come in as a complement, forming natural divisions to his work.

It is well known among teachers that the assimulative power for new knowledge usually falls off very much after the age of twenty or so is reached. This is especially the case when a lengthy gap or interval has been allowed to occur in the training, and a mass of evidence to support this occurs with photographers in the very small proportion who, however hardly they may be pressed, attempt even to increase their knowledge; and the steadfast application required from those who do, it is not too much to say, that independent of the inferior value which knowledge acquired at the age of twenty-five to thirty possesses, as compared with the same knowledge acquired at from fifteen to twenty, the labor and application necessary in its acquirement

is three or four times as great at the more advanced age.

It is from considerations such as these we are forced to conclude that in allowing a lad's training to stop suddenly when he leaves school, even if only temporarily, not only are the best fruits, which might readily follow from the cumulative effect of his previous training left ungathered; but, before he has arrived at an age when he himself may fairly be held in some measure responsible, his future status is placed in jeopardy.

Deficiencies of the Apprenticeship System.

We may next suppose that the lad forming our example is apprenticed or placed to learn his trade with some firm of photographers. In accomplishing this, the parent very frequently considers that he has now fairly started the lad on his career, and, so far as any further training is concerned, leaves it to the care of his employers and the lad's own devices.

Almost universal as such a method of starting a photographic career is, the demonstrable insufficiency of such a procedure is only too complete. In the first place, the professional education, excepting so far as acquiring manipulative skill and a knowledge of some aspects of the commercial economy of the business is concerned, leaves off where it ought to begin, and, although no one will hesitate to admit the prime importance of manipulative skill and of business methods, the trained photographer nowadays requires a great deal more in order that he may attain any *status*. In the second place, even the manipulative work is confined to one or two specialities, whereas the student wants at this, the very early stages of his cereer, and before specializing, trial practice in all branches. Thirdly, the skill acquired will depend largely upon the attention devoted to the student by the employer and fellow-*employés*, which introduces an element of uncertainty into the training, and to which may be added the inevitable proportion of time which is wasted or during which no progress is made. There are also other reasons which at first sight are not so obvious; why the old system of apprenticeship, which is fast disappearing in other trades, must also in photography disappear, or be largely modified and supplemented, in order that the photographer may not only acquire an honorable *status* in his profession, but also keep on a distinct level above his neighbor the amateur.

Technical and Art Training—The Necessity For.

After his training has commenced, our supposed young apprentice finds there are at least five distinct sides to his subject, as follows:

1. The Practical or Manipulative.
2. The Technical.
3. The Commercial.
4. The Artistic.
5. The Scientific.

Each of which requires his attention in a greater or less degree according to the character of the work to which he intends devoting his abilities. To convey some definite idea of the average relative importance of each of these divisions, it will be necessary to consider them individually.

1. *Practical.*—The manipulative skill required for most branches of photographic work is not of a high order; for example, the actual operations involved in the taking of a portrait negative are all of a fairly easy character, and require but little experience and practice on the part of a student to perform them with regularity and success. Notwithstanding this, the chief help which the student usually derives from his work in the studio is confined to a sufficiency of experience in these easily acquired manipulations.

There is, however, one special branch of studio practice which requires a very high degree of skill, and that is retouching. In other departments of photography also, such as working large wet-plates successfully; some portions of process work; and others, considerable manipulative skill is essential.

2. *Technique.*—It is not difficult to show that the main foundation of photography, as a profession, lies in its *technique*.

Whether in the artistic or scientific departments; in landscape; seascape; motion; architecture; reproductions; or printing processes; the worker who is trained in either of them is the one who excels; and on examination, it is found that the success depends not so much upon any particular difficulty in performing the necessary operations as upon *a complete familiarity with the minutiæ and details of procedure*, which give the best result under particular conditions. The reason that several years' training is commonly necessary to get a fair percentage of successful results in any one of them is due to the fact that the worker has not had the opportunity of learning, in a systematic form, the *minutiæ* and special factors which govern different classes of work, but is left like a man groping in

the dark to find his way slowly and laboriously by the method of trial; and, even if he has the guidance of a fellow-worker, it is one who has found it himself by trial and experience, and can only impart it in the same manner.

Take two beginners of identical abilities, perseverance, and general education; give both the average training obtained as apprentices to a photographer, and give one of them, in addition, systematic instruction in *technique*. The latter will become as good a photographer in one year as the former will in four years, and will ultimately become a much more competent and independent worker.

3. *Commercial.*—Important as a training in commercial economy undoubtedly is, which includes such subjects as economy of time, material and wages; value of specialism and enterprise; punctuality, tact, and politeness; treatment of employer and *employés;* accommodation to circumstances; and, in fact, all the *minutiæ* which together form the system of a successful business man; this side of his training is one which, in great measure, would be the same in all trades, and which therefore is rather included in his general education than in his specially photographic one That photographers as a body are behindhand in this department of their training is, however, a fact very widely conceded.

4. *Artistic.*—The value of an art training is second to none in the whole range of a photographer's studies, as it invariably gives the stamp of refinement and superiority to his work. This is abundantly testified in public displays of photographs, where the pleasing effects produced by artistic feeling or culture deservedly take the first rank.

5. *Scientific.*—The value of a purely scientific training to the *working* photographer has, in my opinion, been a great deal over-estimated. In the early days of the art, when the worker had to go through a series of delicate chemical processes for each photograph taken, and when the successful performance of these processes was alone sufficient to tax the knowledge and skill of one individual, it may have been true that a trained scientist was the best man. But, in these days of dry-plates and ultra-simplified printing processes, photography, except in its purely scientific divisions, is being lifted above a test of chemical knowledge or optical expertness, and, in taking its place as one of the most valuable handmaidens the fine arts possess, must sooner or later be admitted into partnership with them.

The chief use of a knowledge of chemistry, molecular physics and optics to the photographer, independent of the general educational value; lies in their giving him a clearer insight into the sciences utilized in his work, and thereby inducing an interest which acts as a powerful antidote to the apathy which is so fatal an enemy to progress.

More Care Required in Specializing.

Another division of his subject is recognized by the photographer more and more clearly as his work proceeds. Having probably started by associating photography with taking portraits only, he becomes conscious of fields and scope for work in which portraiture plays no part; he finds workers devoting the whole of their time and energies to landscapes, to copying, to architecture, to printing, or to process work; and even in portraiture alone he finds one worker devoting himself to operating, another to retouching, and a third to printing. He begins to realize that it is impossible for an average individual to master every branch of photography, and so it comes about that he, like the others, has to select some departments and reject others—in fact, specialize.

In doing this, he is usually guided by what he considers the most lucrative portion of the art, and in most cases portraiture seems to be chosen. It is, of course, a matter of opinion as to which branch of photography offers the most lucrative openings, but in my opinion the prospects of a landscape or general worker, or a reproductionist, at the present time, are better than those of a portrait photographer, these prospects being not so much in the silver print as in the collotype film, the copper-plate, or the type block.

There are other factors also which should be considered in deciding upon the direction in which to specialize. The probationist, while it is still in his power, should be guided more by his own capacities and temperament than he is at present. If he likes indoor life and delights in the human figure, he would be unwise if he did not take up portraiture; but if an out-door life suits his constitution and tastes, he would be equally unwise if he did not specialize in landscape and other out-door work. For town life he must be more expert and specialistic than for country life, for which a good general excellence is better suited. And, again, according to his proclivities, he should choose the artistic or manipulative sides of his subject.

Whatever special branches he ultimately adopts, a good general commercial and art education, and a good technical and trial knowledge of all the principal photographic processes, with their individual applications and possibilities, should form the basis of his work.

Evidence of the Present Insufficiency of Training.

Evidence of the insufficiency of the present system of photographic training is everywhere present.

In the extremely limited range of most workers' skill, which, while good in itself when carried to sufficient perfection, and supported upon a general foundation, is frequently mere rule of thumb, so that the results are capricious, and, in taking up new processes or methods which the progress of technology or discovery may render advantageous, the worker finds himself but little better than a novice.

In the deficiency of technical, artistic, and general knowledge so commonly met with, which, while it is excusable among those who, interested in photography, are not expected to know its minutiæ, it is inexcusable among those who, by their calling, are expected by a public—quick to criticise harshly—to have been properly educated in the art they profess.

And, last but not least, in the surprising facility with which a determined outsider will place himself on a level with workers of a lifetime.

The Probable Remedy.

It is, I believe, in the spread of a sound and largely extended intermediate and supplementary training to that of the school and the studio that the photographer will not only occupy an impregnable position as a specialist, but will also learn how to utilize to the *uttermost advantage* the factors and processes at his disposal, and in so doing will both kill the untrained competition from which he in so many cases at present suffers, and will place his business on the soundest of all foundations.

E. Howard Farmer.

HOW TO LOOK AT PHOTOGRAPHS.

[Read before the Photographic Convention of the United Kingdom.]

Photographs are generally said to show either technical or artistic excellence. Sometimes both qualities are visible in the same piece of work, sometimes they are not. There is another quality which ought to be present in all photographs without which no photograph can be considered perfect; and, until this quality has been recognized, the photographer should stop before he pats himself on the back and says, "What a good boy am I," after he has taken what he may look upon as a perfect piece of work, as an example of technical skill or as an attempt at picture-making; it may be clever, yet for all that it is a failure if it cannot *speak* to those who look at it.

There has been, as you all know, a lot of strife between what has been called the old school and the new, and the sharp and the unsharpened; it seems to me that, if both these parties had looked at their work and at that of others in the right way, all this bickering would not have been. It would almost appear as if many consider their photographs as an end rather than a means to an end, and as if all that is expected of the spectator is that he should admire the skill of the worker as shown in his work; sometimes even it appears to be the *author* of the work who expects to be admired. Only the other day this was strongly impressed upon me. A youthful photographer was pointing out the beauties of what he considered a most successful picture, which he had just finished, to one of our oldest photographers, saying how he had been advised to place a figure at such a spot, but did not, because, seeing the old photographer smile he stopped in his oration, and, I hope, received a useful lesson when the old one said: "Pardon me for smiling, but I was thinking of a whipping I once got for falling into a horse-trough the very image of the one you have there." That old photographer knew how to look at photographs, for he was able to make them speak to him and recall to his mind bygone days. The person who looks at a photograph as a complete picture, unable to say anything about anything except the facts which existed at the moment of exposure, does not see very far. You may contend that, if this is true, it will depend more upon the spectator than upon the photograph, for what will give pleasure to one will say nothing to another. To be sure if the spectator is blind to everything except the mechanical part of the work, the loss is his alone; but he need not, as he often does, call attention to his own ignorance by denouncing a picture a failure because his mind happens to be blank excpt so far as a knowledge of a certain kind of mechanics may go.

If a photographer thinks he can tell his tales better by making his works microscopically sharp, let him do so by all means; if any one's hobby is the study of mosses and fungi, no pinhole or spectacle-lens view will remind such an one of the happy days he has spent in poring over damp walls in musty nooks and corners. To some an extremely sharp picture may be positively painful, for it will perhaps disturb and break the train of thought, whereas a less-defined one would allow the mind to wander at its own sweet will. At the last exhibition of the Photographic Society, the hanging committee, the secretary and the judges had the

opportunity of studying a few works which the rest of the world were not allowed to see. I don't allude to those which were hung on the floor, and afterwards consigned to the cellars, but to a small collection of pictures by the worthy President of this Convention. Among them was an almost ideal photograph. I don't mean that it was so uncertain and undefined that it could have represented anything the spectator might have been pleased to wish, but it was just enough to start the mind along a pleasant channel. The foreground did nothing more than carry the eye to the principal object, and when it got it there the eye was politely asked to take a seat, and the mind then began to entertain the spectator, and picture after picture were put before him; one heard the wind blowing and whistling through the mill sails, and then it almost died away, only to come again in louder and louder gusts. Now the miller and his man come out and look anxiously, first at the yellow sky, and then at the wands, from which they take in nearly all sail. Yet the big arms rush round at a fearful rate as the sky gets darker and darker; what an enormous size the mill looks—did you ever go underneath a mill's sails in the dark? What terrible things the arms are—they are more like a nightmare than anything real, as they come down threatening to crush you at every turn, yet never getting any nearer. Then, perhaps, you awake from your dreams, only to find yourself inside the mill on a bright summer's morning, where the snowy whiteness is but little less dazzling than the sunshine outside. You notice how spotlessly clean the floors are polished by an unending stream of golden grain; your nostrils drink in, with infinite delight, the scent of newly ground wheat. Perhaps the miller weighs you in the big, old-fashioned floury scales, in which have been weighed, in good years and bad, the daily bread of the whole village. All this, and much more, did Mr. Davison's simple photograph say. Had it taken by one of the cast-iron school, the same pleasant train of thought might have followed, if (mark the "if," if you please) one could only have kept at a distance of ten yards; but where is the man who is content to look at a photograph from this distance? No, it would have drawn us nearer and nearer, and every step would have disturbed the train of thought by forcing other subjects forward. Most likely the excellence of the lens would have been impressed upon us, and, once started on such a subject as cameras and lenses, good-bye to all pleasure.

You may think a windmill is a very suggestive subject—almost alive, as it were—and that it is only natural that it should have a story to tell. Very well, then, take photographic portraiture, or likeness-taking, as it used to be called; which are the successful portraits? Those which are most beautifully posed, most brilliantly lighted, and most elegantly retouched? Not a bit of it. The best portraits are those which remind us in the happiest way of the originals. Those sitters who go to be taken only to please themselves are invariably disappointed, and "serve 'em right;" for who, in their senses, wishes to be reminded of themselves? Or take views for a change. Why do people buy local views? Are they allured into spending their money because they are offered such exquisite examples of photographic art? No; all the tourist wants is something to remind him of the places he visits, something to strike a note in his memory. A few years ago I took a view, but somehow or other it did not sell at all, though it was as clear as the most fastidious could wish for. No; the view which sold was taken by the other man, though he ought to have been ashamed of it, for the grass was black, and his whites were white without any mistake. But his prints sold; do you know why? At one corner of his view was a white-washed public-house. I learned afterwards that visitors called there to refresh. My view did not include that ugly public-house. What I gained in artistic excellence I missed in sentiment and £ *s. d.*

There is another class of work which should certainly be able to speak. I mean subject or *genre* pictures; but these sometimes fail to appeal to anything but the spectator's sense of humor, so narrow is the line which divides the sublime from the ridiculous.

Turn to whatever branch of photography we will, it is hard to find one that does not provide ground for our airy palaces. You have all heard of the man who had been so badly brought up that

> "The yellow primrose by the river's brim
> A yellow primrose 'twas to him,
> And nothing more."

Somewhere on the walls of this room you will find a photograph of some animals—sheep and lambs. Now, this little photograph will most likely say to you what the yellow primrose ought to have said to the unfortunate man. It will remind you of the days when you were young and innocent as the lambs; it will remind you of successive spring-times, of the birth of many happy years. Young lambs always remind me of a photographer I knew when a boy. He was always singing,

> "If I'd as much money as I could tell,
> I wouldn't go crying, 'Young lambs to sell.'"

He had, like many of us, mistaken his vocation, and was consequently miserable.

If possible, whenever you look at a photograph, try to forget the photography. An architectural photograph will preach no end of sermons in stone to one who is well versed in the history of architecture, but to one who knows nothing of this art it will only tell of small stops, wide angles, and the like; it will supply him with less mental food than the view of lambs would to a man who had never known the country, to whom sheep and lambs only meant mutton chops and lamb and mint sauce.

No doubt you are thinking, Who do you expect has time nowadays for all this dreaming, and will be saying that you want your pictures ready made without being at the trouble of making them for yourselves. If these are your thoughts, I am afraid you find the world a very hard place, for, if you take away the "make-believe" with which life is colored, you must make existence almost unendurable.

Those among you who are unable to agree with what I have said will, I think, at least admit that it is better to take your photograph first, and then build your ideal on it, than to raise your ideal and then expect to be able to take a photograph to come up to it. I will, if you allow me, give you an example. A customer of mine wanted his shop-front taken. By the way, shop-fronts are about the only things the amateur has left for us poor professionals to take. Well, I took the shop-front, but it failed to please. Why? Because my customer expected the photograph to rise as high as his imagination did. When I asked him to point out the faults, he said that, in the first place, the young lady looking out of the window was too short and fat, not tall and graceful, as she should have been. Secondly, a wax figure he expected next week for the window did not show in the photograph; but his principal objection was that a gilded sky-sign, which he intended having put up next winter, was not in my picture.

May I say that a photograph gives us the naked truth, which has to be clothed by the imagination.

F. M. Sutcliffe.

Notes and News.

The Production of Cold.—A temperature as low as about —200 deg. C., only 73 deg. above the absolute zero, has been obtained by allowing liquefied air to expand freely and suddenly. The air is liquefied in the first instance by subjecting it to a pressure of 75 atmospheres (1125 lbs. per square inch) while cooled to —130 deg. C. by the evaporation of liquefied marsh gas.

A New Antiseptic.—As we cannot be supposed to have arrived at the production of a perfect antiseptic harmless to photographs, it is worth noting that a new aspirant for honors in this direction has made its appearance. Formaldehyd is stated to possess remarkable properties of sterilization, which practically amounts to the same thing as being antiseptic. It is so powerful in its effects that it is stated that when so readily putrescible a compound as urine is treated with it no putrefaction can take place In some of the preparations used in bacteriological research its effect is more powerful even than corrosive sublimate, one of the best antiseptics known, but objectionable on account of its toxic properties, and quite inapplicable to photographic purposes on account of its chemical action.—*Brit. Journ. Photo.*

Action of Light on Sulphite of Silver.—In a recent number of the *Chemical News* Mr. W. H. Sodean relates some experiments with regard to this action of light which have a decided photographic interest. The salt was prepared by passing sulphurous anhydride into a solution of recrystallized nitrate of silver, washing the precipitate thoroughly, and completely dessicating by keeping it in a vacuum over a mixture of sulphuric and chromic acids. When kept in hermetically closed tubes it was slightly blackened after a fortnight's exposure to sunlight. When the temperature was raised the blackening was more intense and more quickly brought about. It was noted also that when moisture was present the darkening was accelerated. This latter effect might be anticipated, for it is well known that many familiar gaseous reactions are absolutely impossible when the gases before mixing and the containing vessels have been rendered perfectly free from water vapor. Quite recently, for example, it has been shown that sulphuretted hydrogen gas, so fatal to silver prints and injurious to silver articles, is quite without action upon silver and other salts when quite dry.

Albumen and Sulphur.—The connection of these two bodies has a close bearing upon the most familiar form of silver print, and Herr Rosing has discovered the singular fact that when an emulsion of pure sulphur is mixed with egg-albumen a decomposition takes place. The albumen is oxidized, a hydroxyl group derived from a molecule of water replacing a hydrogen atom in the albumen molecule, whilst the displaced hydrogen atom unites with the remaining hydrogen atom of the water molecule and with an atom of sulphur to form sulphuretted hydrogen. This action, however, does not take place when no water is present, nor when neutral salts capable of combining with water are present, nor when the albumen has been previously with iodine or other substances. Now, it is evident that in a print in which toning takes place by "sulphurization," we have conditions very similar to these: albumen and sulphur in a fine state of division brought into close contact, with a probability of the gradual production of sulphuretted hydrogen, its gradual oxidation to sulphuric, and their imperfect removal in the after-washing. Indeed, directly or indirectly "hypo" is made, and not without cause, the bugbear of fugitive silver prints. Now, it may not be generally known to a great number of modern photographers that ammonia is a very good fixing.—*Brit. Jour. Photo.*

MAGNESIUM AS A SOURCE OF LIGHT.

IN the *American Journal of Science*, April, 1892, Mr. Frederick J. Rogers sums up the results of his investigations as follows:

1. The spectrum of burning magnesium, as has already been pointed out by Pickering, approaches much more nearly that of sunlight than does the spectrum of any other artificial illuminant:

2. The temperature of the magnesium flame, about 1,340 deg. C., lies between that of the Bunsen burner and that of the air-blast lamp, although the character of its spectrum is such as would correspond to a temperature of nearly 5,000 deg. C., were its light due to ordinary incandescence.

3. The "radiant efficiency" (the ratio of *luminous energy* to total *radiant energy*) is 13½ per cent., a value higher than that for any other artificial illuminant (excepting, perhaps, the light of the electric discharge in vacuo, for which Dr. Staub, of Zurich, has found an efficiency of about 34 per cent.).

4. The radiant energy emitted by burning magnesium is about 4,630 calories per gram. of the metal burned, or 75 per cent of the total heat of combustion; as compared with 15 per cent. to 20 per cent. in the case of illuminating gas.

The thermal equivalent of one candle-power-minute of magnesium light is about 2·5 lesser calories, as against 3.5 to 4.0 for other artificial illuminants.

6. The total efficiency of the magnesium light is about 10 per cent. as compared with a quarter of one per cent. for illuminating gas.

7. Taking into consideration the greater average luminosity of the rays of the visible spectrum of the magnesium flame, it is certain that *per unit of energy expended, the light-giving power of burning magnesium is from fifty to sixty times greater than that of gas.*

THE SAN DIEGO CAMERA CLUB.

THE youngest and one of the most promising amateur Camera Clubs of the country has just been organized in San Diego, California, with over twenty charter members, and the prospect of a largely increased membership. The club rooms include two excellent dark-rooms with the best appliances for developing plates. The plan of the club is to have lectures, lantern-slide exhibitions, exhibitions of the work of members, and other entertainments of an instructive nature. Among the members of the club are some of the best amateurs of the land. The exceptionally favorable atmospheric and climatic conditions of this charming city makes camera practice more than ordinarily fascinating. Only a few days throughout the year is the sun obscured by clouds for an entire day, while the equableness of the climate, both summer and winter, makes field-work possible under the pleasantest circumstances. Marine and landscape views abound. According to Charles Dudley Warner, the view of San Diego Bay and its environments, is one of the four finest marine prospects in the world.

Indians, Mexicans, old mission ruins, adobe houses, and the diversified flora of the country, whales, wild sea lions, and sailing craft of all kinds contribute subjects for thousands of pictures.

The San Diego Camera Club is the name of the new organization. Its officers are: Dr. Joseph Rodes, President; A. E. Higgins, Vice-President; E. M. Brickey, Secretary; Charles Wellborn, Treasurer.

Queries and Answers.

336 L. D. B.—Several times this summer I have when developing negatives observed a very decided light which at first I thought came with the water from the faucet. The water is so cool that in warm days instead of using any ice, as I found otherwise was useful with all plates and necessary with films, I usually keep my developing tray in a shallower one of running water led down from the faucet by rubber tubes. This occasional light aroused my curiosity. I thought it must be the result of some chemicals mixing with the water, and at last found I could produce it by quickly dipping my hand from the alum bath for kodak films into the running water.

336 *Answer.*—The phenomenon is in all probability of electric nature, and especially if the negatives being developed are celluloid-films. Can any of our readers (experts in electricity) solve the question?

337 G. GORDON asks; Can you account for the little white spots on the prints enclosed? They were not there when the prints were taken out of the wash water, but developed when drying between blotting paper.

337 *Answer.*—Some foreign substance on the blotting paper is probably the cause. Bromide or iodide of potassium, chloride of lime, cyanide or ferricyanate will produce such spots, but they being nearly white we incline to think particles of bromide of potassium have in some way come in contact with your blotters.

338 MISS CELIA M.—What is the best method of arresting frilling and softening of the film, when it occurs in the wash water after the negative has been fixed.

338 *Answer.*—Plunge the negative in an alcohol bath for four or five minutes, blot of with bibulous paper and wash again.

339 A. B. C. wants to know what is agar-agar, recommended for the making of emulsions in substitution for gelatine.

339 *Answer.*—It is a vegetable substance presumably something like carragheen or Irish moss. The experiments made to substitute it or to use it as an improvement in place of gelatine do not seem to have been very successful.

340 MISS BELLA G. N.—How are cloud pictures made? I mean clouds only, without the land or seascape beneath? Several attempts made proved disastrously, no distinctly outlined clouds, but heavy indefinite masses only were the result.

340 *Answer.*—Of course the instrument must be pointed high enough to escape the landscape. Clouds require a very rapid instantaneous exposure, an orthochromatic plate with faint ray filter. The best pictures of that kind are taken immediately before or after sunrise and sunset, and when heavy clouds accumulate before the sun and are strongly illuminated around their contours. The best chance to get good clouds is about the vernal or autumnal equinox.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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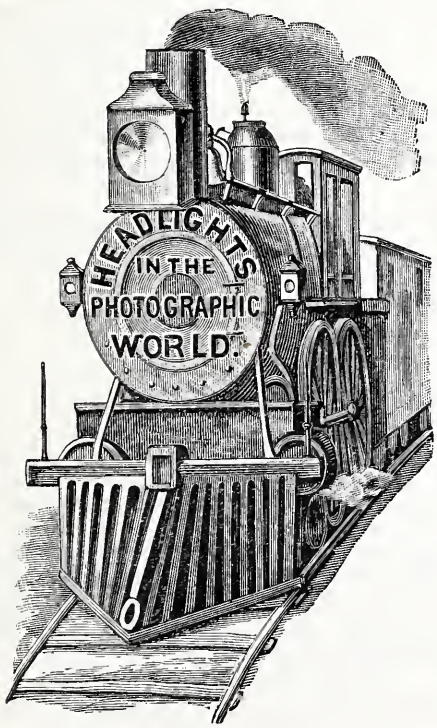
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Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

Business Notices.

WANTED.—August 28, 1891, issue of THE PHOTOGRAPHIC TIMES by Dr. A. C. Mercer, 324 Montgomery Street, Syracuse, N. Y. Will pay 25 cents for it.

FOR SALE.—4 x 5 Gennelli Camera, for making four minette pictures on a plate. Good condition. Price $12. Address G. B., care THE PHOTOGRAPHIC TIMES.

FOR SALE.—A ground floor Photo Gallery; everything ready for work; well situated; good reasons for selling. Will sell at a bargain. Address
JOS. JOHNSON, Box 211, Mt. Pleasant, Pa.

FOR SALE.—One of the oldest and best equipped galleries in the city of Denver, Col.; centrally located, and good prices. Newly refitted up to 18 x 22. Good reasons for selling. Correspondence solicited. Address "PHOTOGRAPHER," care PHOTOGRAPHIC TIMES.

FOR SALE.—A new 4¼ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
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STOLEN.—On the night, sometime, from August 15 to 16, the following articles were stolen from the Weinig gallery, Third Avenue, near 114th Street, one 11 x 14 Scovill View Camera and three double plate-holders (formerly the property of Emil Wagner, of Brooklyn); one Schnitzer & Co. Rectiscope Lens No. 4, with Rotary Stop; one Scovill Tripod. Should any one hear of these articles, or should they be offered for sale, it is requested that they report to the Editor of THE PHOTOGRAPHIC TIMES, or direct to Mr. Weinig.

PHOTO GALLERY FOR SALE.—A good stand, and can be bought cheap. H. C. RANDOLPH,
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Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper..... 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English), Vols. I. and II. (except No. 18), 1890, 1891.

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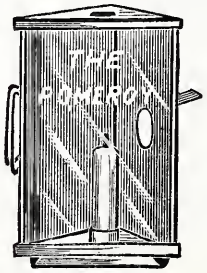
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Para-amidophenol (pure)	100 grains
Sodium sulphite (crystals)	3 ounces
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The stronger the solution the greater the intensity of the resulting negative; the more diluted the solution the greater softness and more detail.

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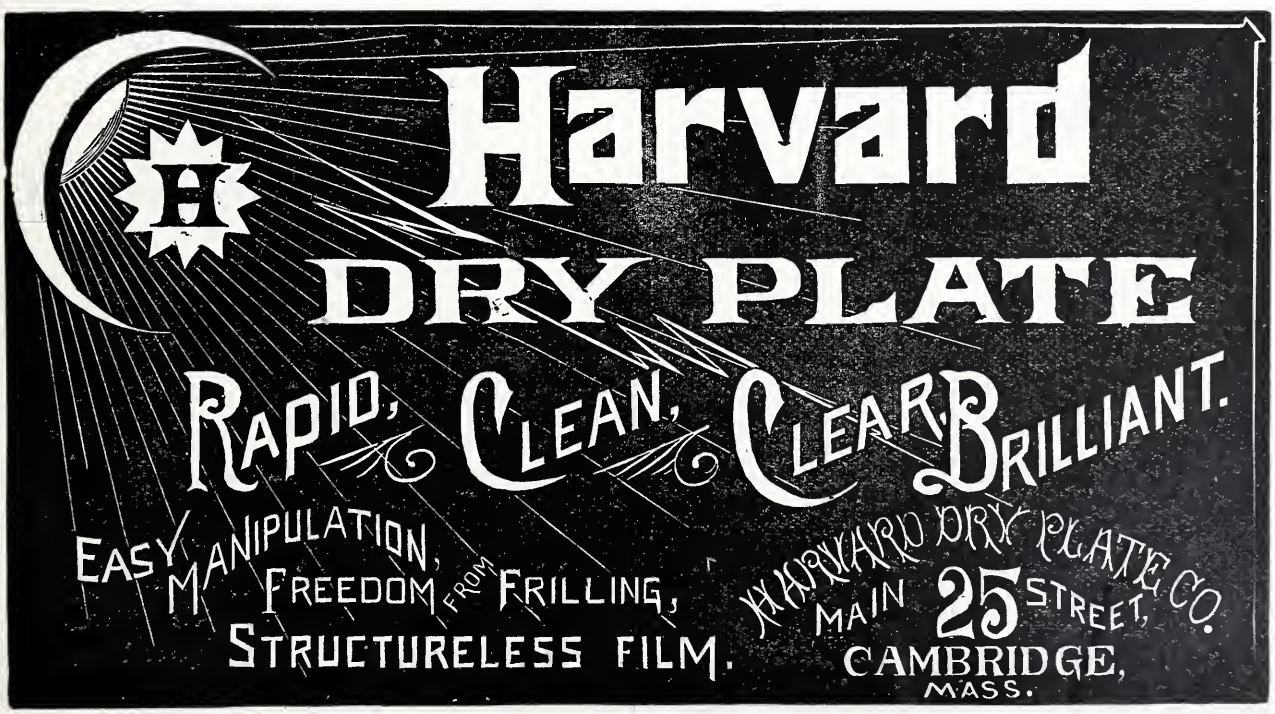
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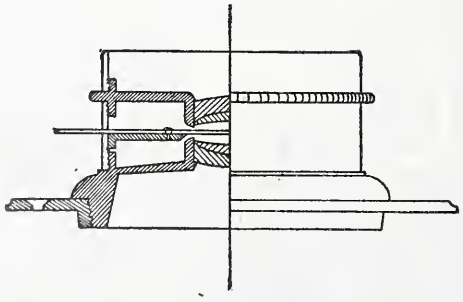
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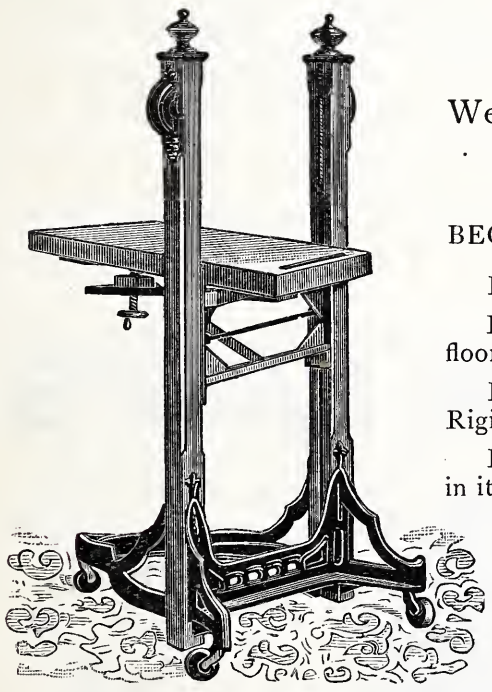
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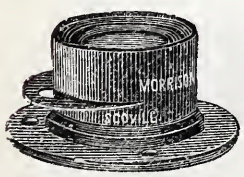
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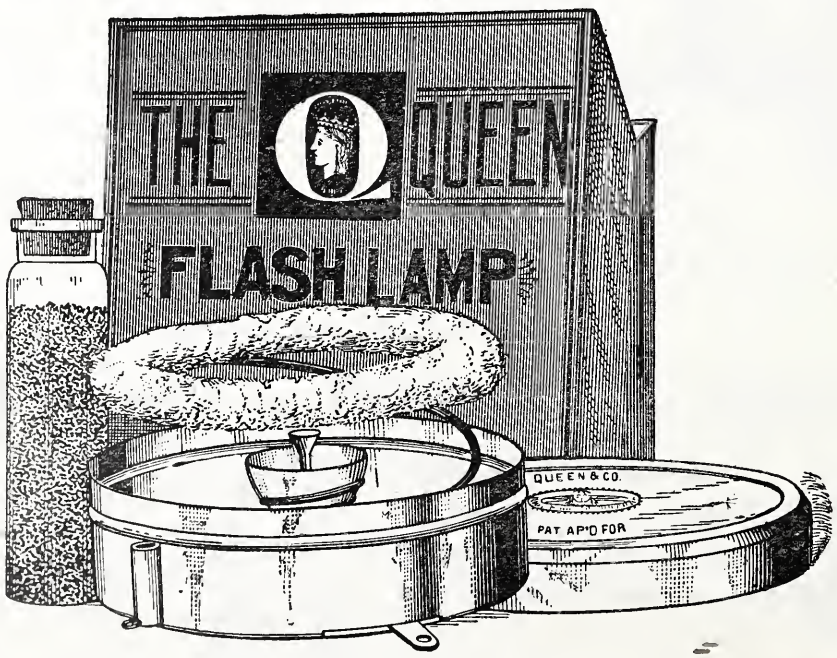
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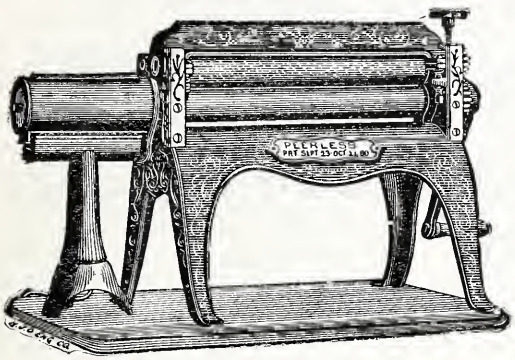
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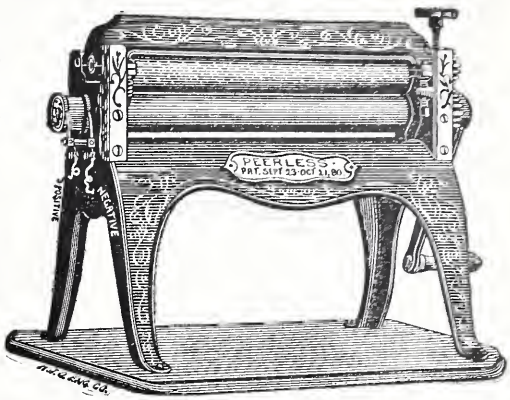
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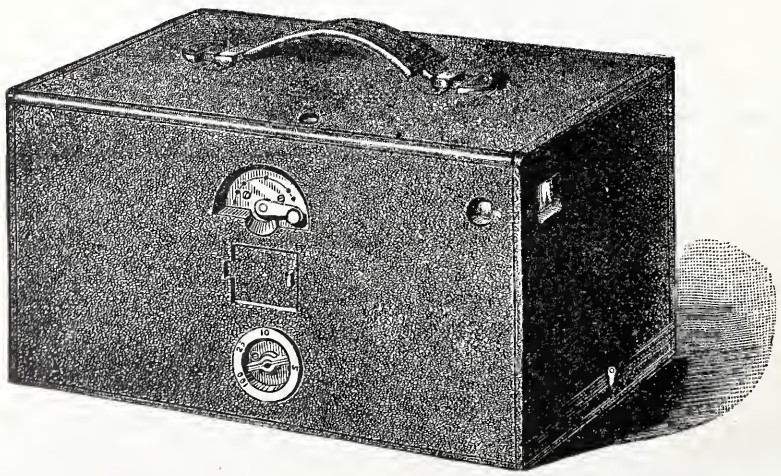
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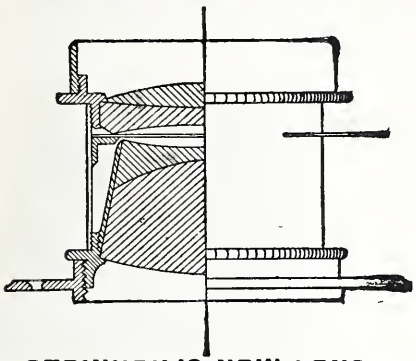
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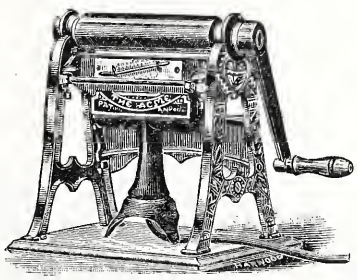
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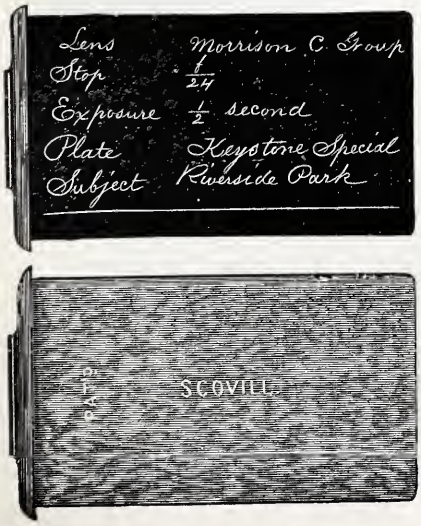
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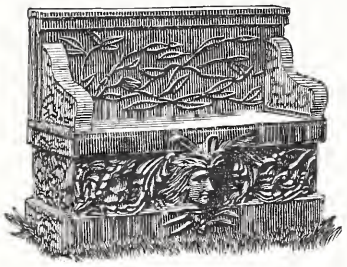
In the pleasure or excitement attendant upon picture-taking, holders slides have been so changed about that the note-book afforded no clue to their identity. All photographers, whether professional or amateur, who have in time past puzzled their brains in the endeavor to solve such vexatious questions as these—

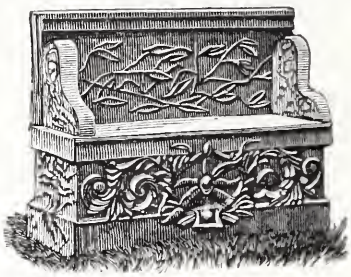
"Have I or have I not exposed that plate?"
"If exposed, was the plate used for that prized picture?"
"Shall I incur the risk of making a double exposure?"

henceforth will have themselves only to find fault with if they do not procure and use in their dry-plate holders the patent registering slides, or as they have been called "Record Slides." These can be written upon with slate or lead pencil *ad libitum*, and the writing erased without injury to them.

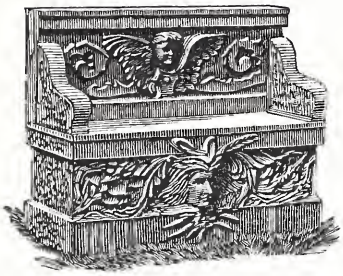
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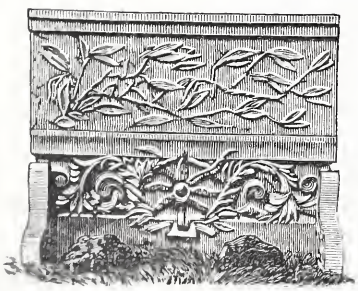
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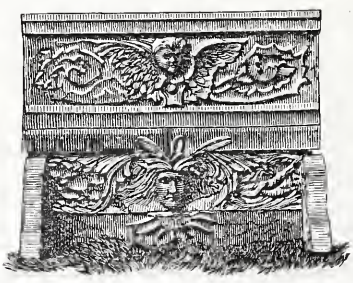
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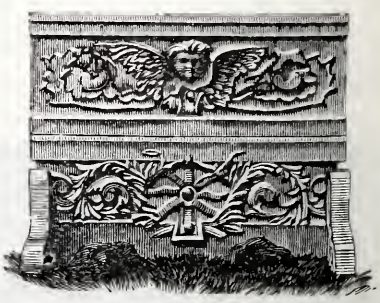
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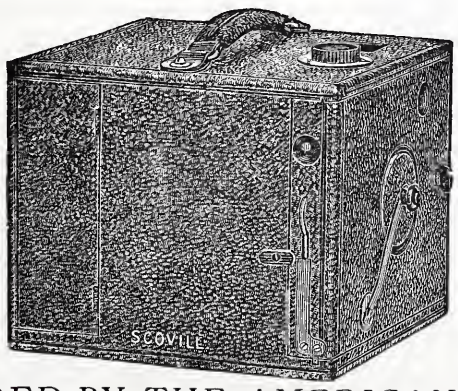
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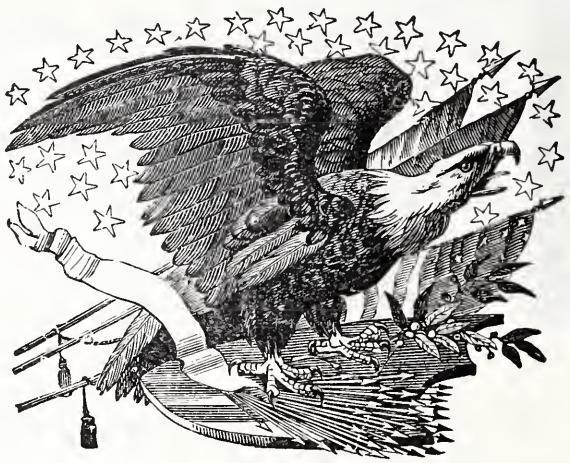
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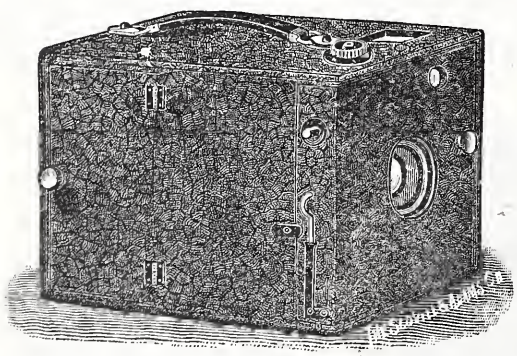
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If he is going away for a summer vacation, or for a trip abroad, and expecting to to make a large number of pictures, he will procure a roll-holder loaded with continuous films. This will save him the bother of developing while he is away from home, and of changing plates; but he cannot well know what results he has secured until he has exposed the entire roll and has had it developed.

For those who want to use celluloid instead of glass plates, and are not willing to trust to good luck in the exposure of the complete roll of film, we offer with the "TRIAD" camera a *double* film holder which is very light. If the amateur carries six of these holders (loaded with twelve films) he is well supplied for one day · that is, if he is prudent and aims to get only really good pictures. At night, either in a photographic studio or in his own hotel room, the exposed films may be put away into safe receptacles, and another lot of unexposed films substituted for them.

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For timed exposures use a tripod (easily adjusted to the camera by the plate underneath), open the door at the back, so that the image on the ground glass can be easily seen, set the shutter with the opening opposite the lens, and bring into use the felt cap which fits the opening in front of the camera By complying with these simple requirements you have a complete camera for timed exposures.

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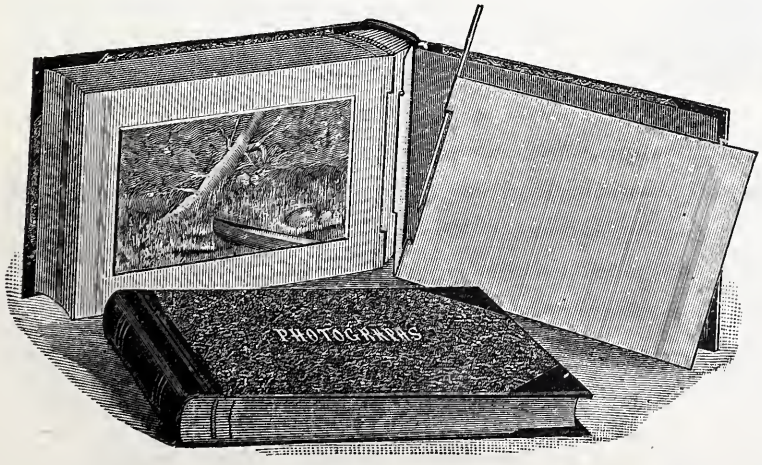
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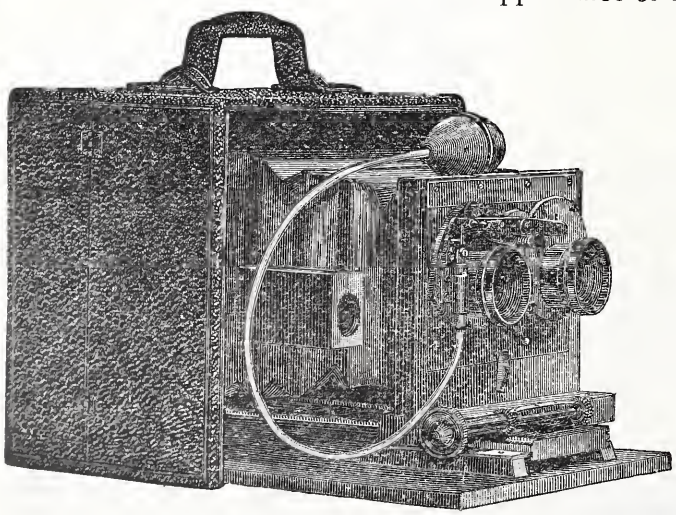
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide ; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

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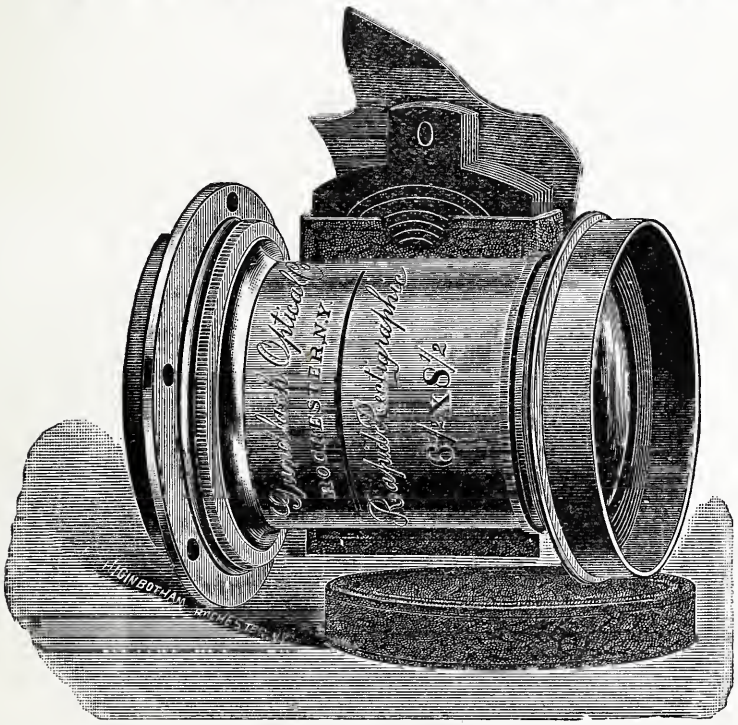
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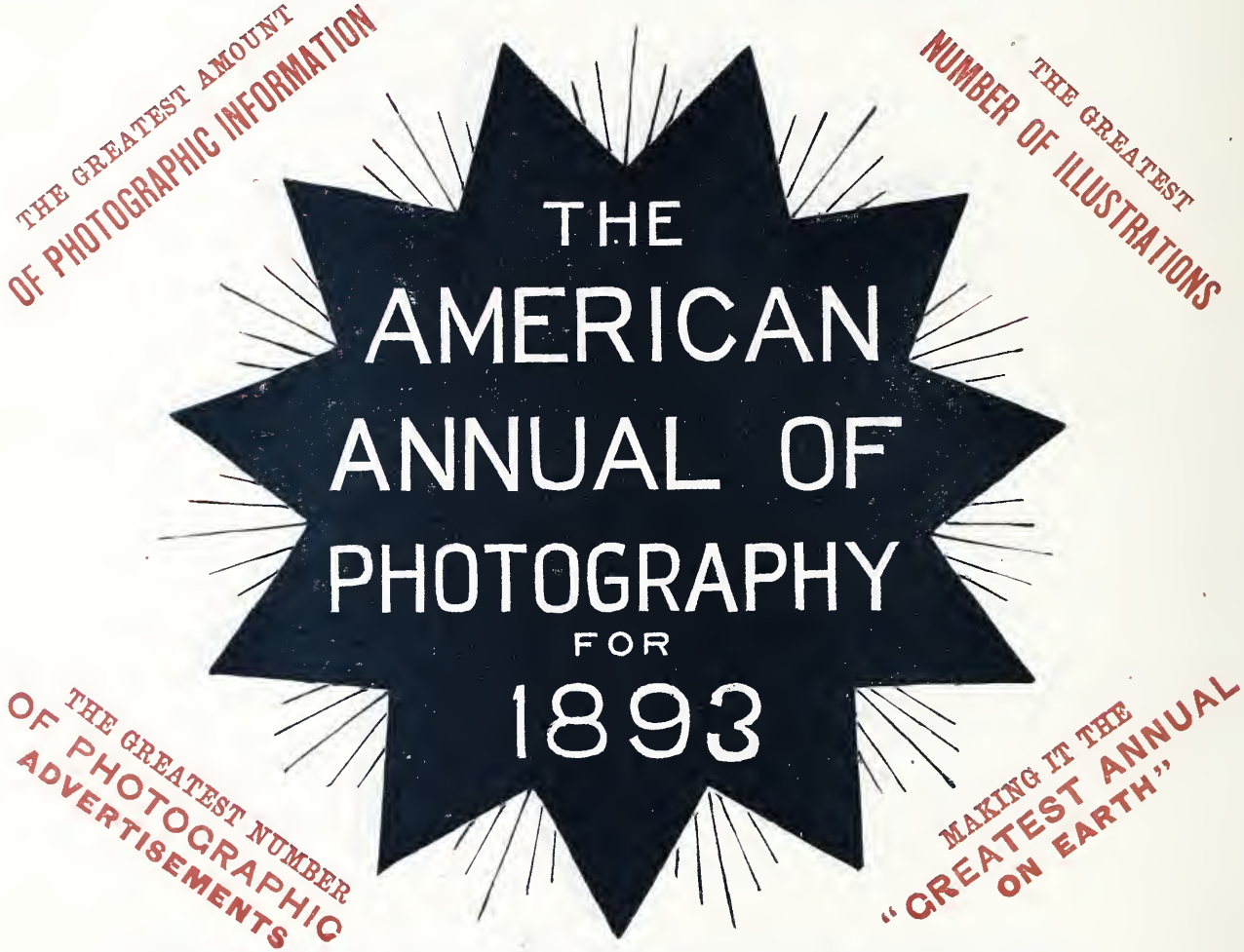
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Miss Emily V. Clarkson, Photo.

A TURKISH LADY.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. SEPTEMBER 23, 1892. NO. 575.

A TURKISH LADY.

OUR beautiful figure picture this week is from a negative by Miss Emily V. Clarkson, the well-known lady amateur, who has already contributed several pictures to the series illustrating THE PHOTOGRAPHIC TIMES.

The subject of the picture is Mrs. Lounsberry, of the New York Camera Club. Also a gifted amateur photographer. We believe that Mrs. Lounsberry is herself a descendant from a Turkish family. At all events she certainly represents the ideal Turkish lady in Miss Clarkson's picture.

The photograph was first exhibited at an exhibition of the New York Camera Club last winter, where it attracted a great deal of favorable attention and much praise.

PICTURE-MAKING IN THE STUDIO.

IV.

SOME TIME ago I had a packet of photographs sent to me to judge for a provincial exhibition. Among them were two prints which at first glance appeared to be exactly alike, but at a second look the one appeared much better than the other. A still closer inspection showed that an additional figure had been added to the group. The one print represented a group of three picturesque little boys drinking from their hands at a well. The motive was admirable, the figures intent on what they were doing and forgetting the camera, but the experienced eye at once felt that there was something wanting, a vacancy, a "space to let" in the picture. By no means a model picture except in a feeble class. The second print had been taken from the same negative, but what a difference! A fourth boy had been unobtrusively added, and the group was complete, soul-satisfying, perfect. There were no other contributions to the class and therefore no competition, but I had no hesitation in recommending it for the highest award.

The combination was so perfect that the present writer, an old hand at this kind of work, was not certain how it was done, and wrote to the artist for information. He received the reply, with many undeserved compliments, that it was all to be found in his own writings. But the photographer had "bettered the instruction," and I was glad to see the method carried so far as to puzzle myself, and confess that I should like to have to wonder oftener.

Combination printing is useful to the picture maker both inside and outside of the studio, and in this article I shall not confine myself entirely indoors.

The time is gone by when any apology is necessary for this method of printing, although it has been fiercely attacked in the past, and even now gets a few feeble kicks—for the sake of consistency, perhaps—from those who have ceased to disbelieve in, and sometimes use it.

Before we go into practical details it may be worth while to enumerate some of its uses and advantages.

It enables the photographer to do what would otherwise be impossible.

It has banished blank white skies from English photographs, and will, I hope, dismiss them from all landscape photographs as knowledge of nature increases, and the love of art spreads.

It enables the landscape photographer to correct the errors of nature by giving him some command over composition. There are those who insist that "nature cannot err," but that is simply a plausible saying not in the least understood by those who superficially use it, and is, like many of our proverbs, which are supposed to be the essence of truth, very misleading. The artist must look upon nature as his raw material for making pictures. She is not an artist herself; she never selects,

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never composes. Art, on the contrary, selects, restrains, composes, is emphatic or reticent; while the prodigality and carelessness of nature is evident. Nature is often very lonely, and yet careless about her looks. It is the province of the artist to condense her and make her presentable. Nature does not always choose the best sky to a background to set forth her charms; the skilful photographer can select a sky which while being perfectly natural, will agree in line and tone with the landscape, improve the general effect, and convince the beholder that the work was the result of skill instead of accident. Then what *is* nature? Is it telegraph poles, telephone wires, factory chimneys? Nature does not care how these ugly evidences of civilization cut across her skies, the photographer, if he is an artist, does.

It enables the photographer to correct the difficulties of focus. The eye adapts itself instantaneously to all planes so that to the healthy eye all nature is practically in focus at once. There are reasons why we have to dodge this a little in art, and usually slightly favor the foreground, but there are cases in which no amount of excusing the shortcomings of the fixed lens (which, unlike the eye, has no muscles of accommodation) will do. If, for instance, the photographer wishes to take a group of large figures with a landscape background—a favorite class of subject with painters and one becoming increasingly popular with photographers—he finds that if his figures are in focus his distance is blurred beyond recognition. Now no conscientious artist can stand this. His way out is through combination printing, which allows him to pay separate attention to the separate planes.

It often happens, even in these sharp-shooting days, that part of a group taken in a studio requires undivided attention. The baby or the dog is often the weak link in the chain, and may be photographed separately and added to the group.

It would be of little service to go on piling up further instances of the use of this method of printing, let it be sufficient to say that it enlarges the limits of the art, and is the only means of getting many subjects that would otherwise be impossible in photography.

I will now endeavor to give a few simple directions for the management of a few simple subjects, and after he has accomplished these the operator will find the method easily adaptable in many ways.

The principle of combination printing is easily stated. It is the printing of as much only as is required from several negatives on one sheet of paper.

The simplest form is that by which a sky is added to a landscape. This is now almost universally practised, but as a rule much more trouble is taken with it than is necessary. An exact mask is sometimes made of the landscape and laid on the sky. This method produces a hard line, and is not so effective as vignetting.

The landscape negative should have a dense sky. If not sufficiently opaque to leave the paper white when the foreground is printed it must be stopped out. This is best done with black varnish. The varnish should be applied at the back of the plate, thus securing a softer edge. It may be applied with a brush close up to objects with definite edges, and used more loosely round the edges of such objects as trees. The finger will be useful in dubbing the pigment in a vignetting manner into difficult places, and sometimes large spaces may be left to mingle with the clouds, but this requires great judgment. It is not always necessary to stop out small spaces between branches, as they usually develop more densely than broad expanses. Sometimes a thin film of color is required to slightly lighten a passage vignetted at the edges, this is easily accomplished by diluting the varnish with turpentine, and equalizing and softening off with a badger-hair brush, such as is used by painters for softening skies.

When a print is taken the sky space will, of course, be plain white. Now take a suitable cloud negative, and in the printing adjust the print so that it shall print in its proper place, and expose to light. During exposure the landscape part should be covered by black velvet or a suitable mask. This mask must *not* be cut to fit the outlines of the landscape, a mistake often made, and the result leads to instant detection. The mask should be moved during printing so as to gently vignette the sky into the view.

Care should be taken that the sky is not printed so dark as to appear to come in front of the landscape—a common fault—or that dark portions of clouds come over light passages in the landscape, such as distant hills. Light portions of sky may be printed over dark parts with impunity.

The sky negative used should be very thin. If it is a strong sky the shadows of the clouds should be transparent. They are best taken on very slow plates; those used for transparencies are very good, the exposure from half-a-second at midday to two or three seconds for stormy sunsets. I have been using lately slow isochromatic plates, exposed through a yellow screen, and find them very good. I seldom recommend anything but pyro as a developer, but for skies I prefer hydroquinone; for just

the quality that makes this developer less useful for landscapes and portraiture, hardness.

Of course this method is open to abuses. A sky may be selected out of all harmony and truth with the landscape, but if the photographer will be absurd let the punishment fall on his own head and not on the process.

Another example easy to understand, will be that of a three-quarter figure with a natural landscape distance. The figure should be taken before a white background, or all but the figure should be stopped out with black varnish, keeping the edges as soft as possible, and a print taken on matt paper. Albumenized may be used, but is less manageable. The figure now should be carefully cut out and laid on its place on the landscape negative. This will stop out all of it that is not required. A print should now be made of the figure and afterwards carefully adjusted on the landscape, taking care that the printed figure falls exactly on the mask. This is not so difficult to do as may appear to the reader, and if large numbers are required register marks may be made on the corners of the plates, enabling the printer to make the adjustment without trouble.

The artistic effect will be greatly increased if the landscape negative is *very slightly* out of focus.

When the first print comes off it should be carefully inspected, and the joinings may be greatly improved by cutting away portions of the mask in dark parts and substituting varnish on the back. This is especially useful where a light bit of background comes behind a dark portion of the figure.

Excellent effects may be produced by photographing a full-length figure on a suitable background and adding a landscape.

To make a very small addition to a picture, or to work out a large group it is only necessary to play variations on the very simple method just described. In making a large group as many figures as possible should be obtained on each negative, and the positions of the joins so contrived that they shall be least noticed. The skilful combination printer will often deceive the eye of an expert, and lead him to look in the wrong place for the line of junction.

H. P. Robinson.

NO WONDER.

"I hear that the engagement of Mr. Jenks and Miss Dobbs is off."

"Yes, they were in her parlor not long ago and she showed him her latest photograph hanging on the wall, and, just think of it, he went into raptures over the *frame!*"

PRACTICAL TESTING OF PHOTOGRAPHIC LENSES.

[Translated for The Times from the Photo-Gazette.]

Photography does not cease to grow in the public favor, and its applications become more and more numerous.

To meet the various wants of the art new formulas for lenses have been devised, and, as a consequence, the manufactured having increased, less imperfectly studied or corrected have been put in the market.

It is therefore quite interesting to the optician as well as to the buyer to know a simple process for testing a lens, indicating to the former the correction to be made and giving to the latter the practical value of the lens.

Several methods have been indicated; that of the commandant Moessard, applied by means of the "tourniquet" is very good in the laboratory, but certainly not appliable in inexperimental hands.

The process we are going to describe, and which we have employed for about five years, permits, by means of a simple proof made with the lens, to know in the order following:

1. The principal focal distance.
2. The chemical focus.
3. The curve of the field.
4. The astigmatism.
5. The depth of focus.

A second proof, made in slightly different conditions, permits to see the distortion.

The method consists in photographing, with the lens to be studied, a plane aim ruled with crossed parallel and vertical lines, *M*, (*une mire plane quadrillée*), inclined at 45 deg. on the axis of the apparatus (fig. 1).

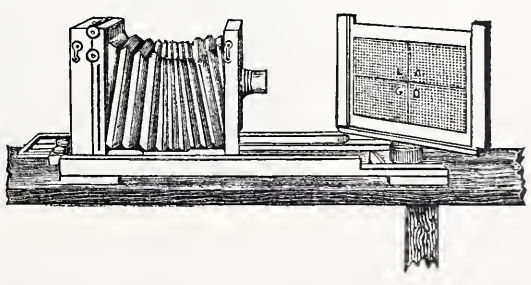


Fig. 1.

The centre *O* of the aim being on the axis of the apparatus, we take the focus on the central line, and reproduce the squares of the aim in natural size.

We will now show that this simple operation gives all the results above indicated.

1. It suffices to measure the distance from the centre of the aim to the ground-glass and to divide by four the result, to obtain the principal focal distance. This only gives the absolute focal distance if the nodal points are superimposed. This result is generally obtained with the symmetrical lenses (rectilinear, aplanats, rapid hemispheric, etc.). On the other hand, by dividing the result by four, the error which has been made is diminished. What is it, however, to the photographer to ascertain the focus of his lens to one-tenth of a millimetre more or less?

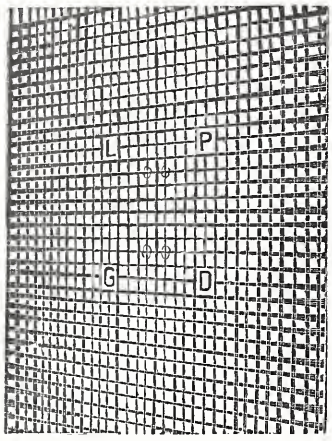


FIG. 2.

2. The central line having been placed in focus, the only examination of the proof or of the negative immediately gives the side andthe size of the chromatic aberration. In fact, in reason of the angle of 45 deg., selected as the inclination of the aim, the distance *a b*, measured on the cliché from the central line to the sharper line, represents four times the distance separating the focus from the luminous rays of the actinic focus (fig. 2). It will be ascertained, by the examination of the negative if the chemical focusis on the side of *L* or on that of *P*.*

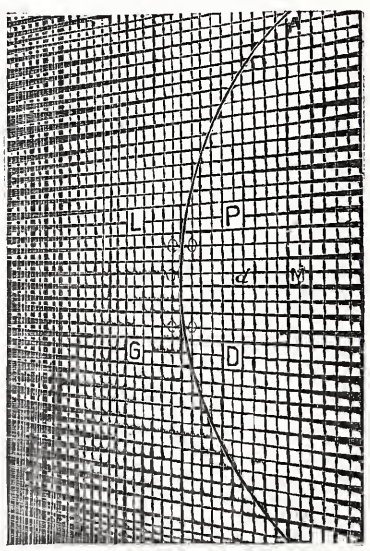


FIG. 3.

3. If one unites by a continuous line the parts of the proofs having the maximum of sharpness, a curve is generally obtained (fig. 3), it is the section of focal distance by a plane at 45 deg. and passing by the apex of the surface. The focal surface, which is the revolution around the axis of the lens, has a pretty complicated mathematic formula depending, however, on the combination of the glasses. Therefore a great error is not made by replacing it by a osculatory sphere of the apex, of which the negative gives the radius.

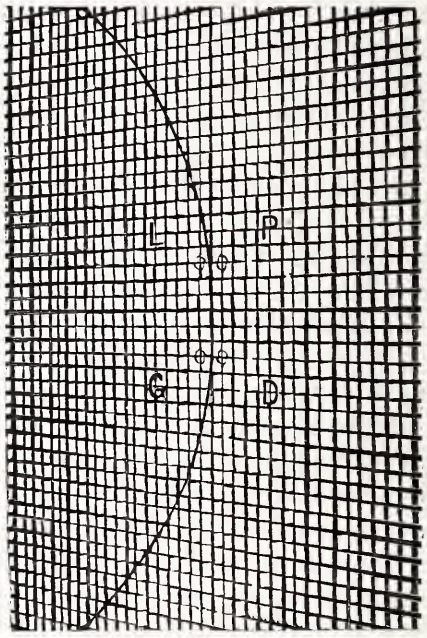


FIG. 4.

We have seen that the distance from the focus of the chemical rays to the focus of the luminous rays was given in size by the distance separating the central line from the point representing the maximum of sharpness. This is also true, at a sufficient approximation, for the point far enough from the centre of the aim (*mire*), so that in reality the curve, obtained by uniting the points representing the maximum of sharpness, is a meridian of the focal distance. This curve being assimilated to a sphere, we can easily determinate the radius. Let us, in fact, consider a chord, *A B*, formed by one of the vertical lines, in measuring on the negative the arrow *d* and the length of the chord 2 *D*, we have

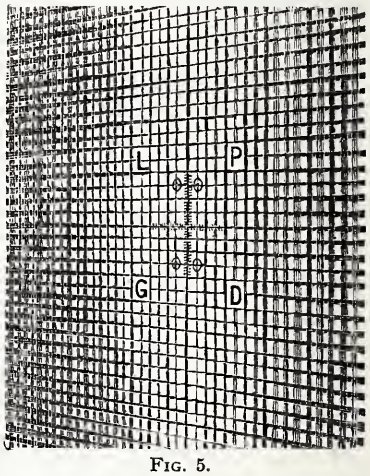


FIG. 5.

$$R = \frac{D^2 + d^2}{2d}$$

and *d* always being very small

$$R = \frac{D^2}{2d}$$

In the negative which has served to make the (fig. 3), we find, for example:

D = 31 millimetres
d = 14 millimetres
R = 34 millimetres

* For the engraving we have been obliged to reproduce the photographic clichés. The effects of blurring, given on the clichés, can only be imperfectly rendered. One has endeavored to do it by exaggerating the thickness of the lines in the places which are not sharp on the photographic clichés.

Hence,

A lens, having a field of such a curve, would not be acceptable in practice.

4. On remarks that the horizontal lines given by badly studied lenses are not as sharp as the vertical lines (fig. 4). This is due to the astigmatism. The astigmatism, which is always null, on the axis, goes increasing towards the edges. In reality there is, in the lenses having this defect, two foci: for the oblique rays, each of these foci giving the particular focal distance, these two focal distancesare tangent to the apex, and one of them often presents a negative curve. In the proof No. 4 one remarks that the curve of the horizontal lines presents, in fact a curve reverse to that of Fig. 3. The focal surface of the vertical lines is sensibly a plane, and the focal surface of the horizontal lines is a sphere of 150 millimetres radius, turned towards the side *L*.

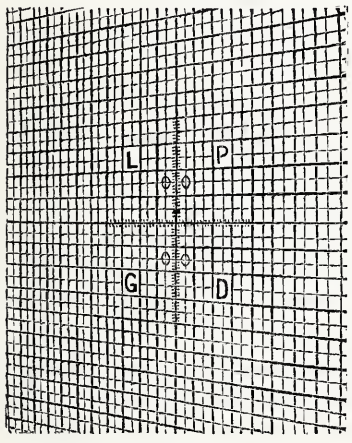


Fig. 6.

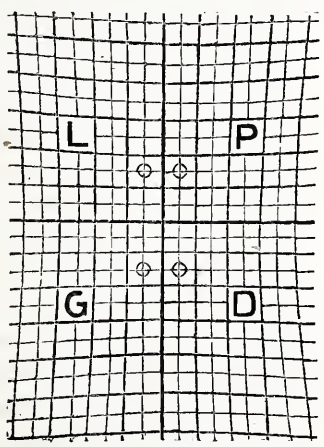


Fig. 7.

5. *Depth of Focus.*—The examination of the aim also permits of appreciating the precious property of lenses, analogous to the faculty of accommodation of the eye, and without which photography would be impossible—that is, the property of giving sharp images of the objects placed at different distances. The focus and the opening being equal, all the combinations have not the same depth of focus, and it is specially by the diaphragm that this quality can be increased. The distance separating the points, where the fine divisions of the horizontal line can no more be cut, will permit to appreciate this quality of the lens. The proofs 4, 5, and 6 show examples of the increasing depth of focus, so that for these proofs the depth of focus can be respectively measured by the numbers 5, 25, 140.

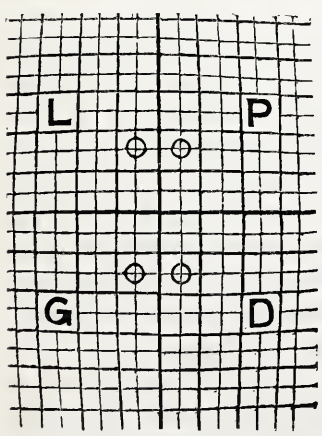


Fig. 8.

6. The negative obtained with the oblique aim being in focus only on a very small space does not admit of appreciating the distortion. One should in order to study the lens in this relation (which is necessary in the case of symetrical lenses) make use of a flat aim, normal to the axis of the lens. It is thus that the figures 7 and 8 present a very great distortion on the reversed side.

N.B.—The illustrations to this article were obtained with the same lens, but the mounting has been modified to obtain certain effects.

J. B. Baille Lemaire.

PICTORIAL SELECTION IN PHOTOGRAPHY.

Light and Shade.

(*Continued from page* 474.)

We will next see what influence "light and shade," or "*chiaro-oscuro*," has upon pictorial effect. The words "*chiaro-oscuro*" are commonly translated "light and shade." Some writers prefer "clear obscure," or "light obscure." The term is used in reference to the lights and shadows of a picture, as also to its tones of color.

In contemplating an extensive landscape it may have been noted that on the objects and forms nearest to the eye, the most brilliant lights and the deepest shadows are seen ; and that, as the distance from the eye increases, these lights and shadows gradually diminish in intensity until they are ultimately lost, blending together in a kind of grayish-blue tint. Not only is it found that lights and shades lose their intensity in proportion to their nearness or remoteness from the spectator, but, as a necessary consequence, the contrasts also are less prominent, and the outlines less distinct, the more the distance is increased.

It may be as well here to state that there is a distinction between shade and shadows, the former being used in reference to those portions of opaque bodies which are removed from direct light, and the latter the deprivation of direct light suffered by another body, occasioned by the opacity of an object which intercepts it. That it is necessary to make this distinction is obvious, from the fact that in nature there is invariably found a difference in the intensity of these two kinds of shade, the

shadow being almost always darker than the shade on the adjoining body by which the shadow is cast. This can be easily seen by taking a white object—say, a cube—and placing it on a sheet of white paper in a strong light, when it will be seen the portion of the cube in shade will be lighter than the shadow it casts. The difference is occasioned by reflected light; but it is unnecessary for me to do more than just refer to it, or detain you further on the matter.

It is the intention of a good picture to tell its story distinctly and intelligibly, avoiding all things which disturb the attention. This, without a good knowledge of *chiaro-oscuro*, cannot be done, for, unless the artist strictly adheres to the leading principles of this department of art, his labor will be thrown away. His first endeavor must be to obtain unity of light and shade by so massing his lights on the chief point of the picture that the eye may dwell on it with undisturbed satisfaction. To scatter over a picture at regular intervals a variety of objects having an equal degree of light is to produce a result more nearly approaching the nature of a chess-board, where the alternating spaces of black and white, so equal in size and power, allow the eye to wander over its surface, finding not a single point of interest on which it can repose. The quantity of dark shade given in paintings is about one-quarter; another quarter is allowed for light, and the remainder for middle tint. In many excellent pictures we see the greatest part occupied by middle tint, with very little positive light or dark, and in others we find a preponderance of light, with just a little "strengthening" or "darkening" of a part to create a focus for the whole. Generally, in this latter composition, small spots of color or strong contrasts are introduced with telling effect, as is often to be noticed in some of Turner's charming works, in which a group of figures, a boat, or even a few broken posts give extreme brilliancy to the picture.

As we are dealing with the camera now, it will be unnecessary for me to enter into the various methods adopted by artists in the treatment of *chiaro-oscuro*, because it is obvious the photographer's art is limited to the extent that he is only able to reproduce the subject as it appears before his lens, after a careful selection of his position, etc., and the due consideration of its most suitable lighting, whereas an artist has greater scope in introducing certain effects, which may enhance the beauty of the composition, although not actually present in the particular subject before him. This would be considered under the head of "invention," which need not trouble us here.

Supposing you have chosen your position, you will note how the objects in the foreground tell, the proportions of the strongest contrasts, the amount of brightest light and deepest shade in proportion to the remaining middle tint. See the shade and shadow is not in excess, so as to produce a dark and heavy result, and that the light does not preponderate, for an exactly opposite reason whereby a weak and insipid picture will be obtained. Do not hesitate to alter your position if these do not quite satisfy you, as no success is gained without labor, and a good negative is worth a little trouble. It will require some amount of practice to nicely determine the "values" of distant prospects, as in photography color is reduced to black and white, with intermediate tones; but for near scenes, picturesque bits, old houses, etc., this difficulty is soon overcome when it is remembered what depth of tone certain colors produce.

Although unity of light must always be sought after, it must not be carried to too great an extreme, as repose will almost be lost by the eye being continually recalled to this isolated point. In order that this singleness may be prevented, it is advisable that other groups of light should be admitted.

These must be varied in their form, size, and degrees of power, and the breadth of the shadows so well preserved that they may serve as places of repose to the eye, separating the groups from each other—that is, there should be *one* single portion having the most brilliant light, and consequently possessing the greatest contrast in the opposite depth of shade, to which should be added other groups of light of a less degree of intensity, whereby both unity and repose will be secured.

The term "repose" is applied to those parts of a picture, either in deep shadow or middle tint, where lights and shades are so subdued that the eye can rest upon them without fatigue after the excitation produced by the brilliancy and effects of the principal parts.

However objects may be scattered throughout the picture, they must be so grouped and collected together that, although each object has its own particular light and shade, the lights of all should generally mass together, as well as the shades, which will give a unity of effect always to be commended. Cast shadows will be found of great assistance in securing this quality of unity, inasmuch as, by passing from one object to another, they connect and hold them together.

Seeing that shadows are more prolonged when the sun is low, it will be well to make exposures, when possible, either in the morning or afternoon, rather than exactly at noon. As, in speaking of

composition, it was suggested that lines receding from the foreground were to be preferred, so, in the matter of shadows, parallel lines should be avoided.

Interest in Objects in Light.

It is important to observe that when any object is placed in light it is essential it should either possess some interest in itself or in its accessories in order that it may have that degree of interest which alone can allow the eye to rest upon it with satisfaction. Without such care it will appear bald and uncouth, and present an uninteresting and defective appearance. Thus, if you are about to select a rustic cottage with whitewashed walls, see that the portions in light have a few picturesque cracks between the stones or across the plaster, are partly hidden by a creeper, or an apple-tree close by. Perhaps a nail may be found on which to hang a bird-cage basket, some garden implements, a sieve, or article of wearing apparel.. If a fisherman's abode, nets, crab-pots, oars and spars may be requisitioned, and failing all these, it will possibly afford a suitable position to place a figure, care being taken in selection of color of dress in reference to contrast. If the ugliness cannot be overcome by any of these means it will be best to reject it altogether, or defer its portraiture until a more fitting time, when it may be seen in shade, and, in consequence, be less conspicuous.

To recapitulate, we have noticed the most brilliant lights and shades are in the foreground, gradually losing their intensity as distance increases, that there is a distinction between shade and shadow, the latter being the darker of the two, the intention of a good picture to tell its own story, which is impossible without good arrangement of light and shade, the great importance of unity in this matter to the getting rid of scattered light, various proportions of light and shade in compositions, the desirability of having more than a single spot of light and the proportionate intensity and variation in size of those added, the gathering together of scattered objects, the assistance of cast shadows, and the necessity of having interest in the portion in light.

To determine the most suitable manner in which we may introduce our figures, and to find the most appropriate position to place them in, must be our next endeavor.

W. D. G.

(*To be continued.*)

THE PHOTOGRAPHIC TRIBULATIONS OF B. JABERS.

There is an indefinable something very catching about a camera that I too caught in common with (apparently) two or more thirds of humanity. I have wandered up against more ready-made (some one else will do the rest) photographers this summer than yellow dogs, and that comparison will, I am sure, be understood fully by all except confirmed bed-ridden invalids.

Most of these fad-befangled individuals I met seemed to have acquired a profound depth of familiarity with the kind of kamdetecdak they each possessed, as well as a most unblushing contempt for the public and their rights that I am wholly unable to attain. Can it be possible that *it comes* with the kind of instrument they buy? None accompanied mine.

I never can seem to let it off at that period at which it would do the most good. Perhaps it is because I have not become accustomed as yet with the anatomy of it, or, mayhap, being a sensitive, retiring sort of person, I have not at my command the faculty for hearty, whole-souled highway robbery, bunko and general guile that is apparently so necessary to the successful snap-shottist. My instrument was given to me when I went on my vacation this summer by a few of my friends who fancied it was just what I needed. They stated to me that *any one* could take pictures nowadays ; the book said so, too ; and to just read the book a little and *go ahead.* So I read the book carefully and earnestly and was much taken with the extreme simplicity of the whole thing, wondering that I had not taken up with such a fine thing before. A goodly case of assorted chemicals was obtained, and I congratulated myself on having a most instructive and healthful recreation before me. Here was a sure cure for my one great trouble—dyspepsia. Why, with a camera one would be encouraged, nay, anxious to take long walks and seek nature. I sought considerable nature, went out loaded for nature and reckoned on having some results as soon as the chemicals were used. I began the chemical operations in the attic, but my wife moved me out to the stable in a few days, she said she could hear *every word I said.* The first week was singularly fruitless in view of the strong assertions I found in the book.

The Nos. 1 and 2 were used just as the book said, and afterwards given every possible variation I could calculate, still to no particular purpose. At this juncture I made up my mind to seek a professional and frankly confide in him, for I

already owed my neighbors over seventeen dozen pictures of themselves, their houses, stock and babies taken under promise to give them some in return for allowing me to practise on them and they were beginning to talk in a way that was neither respectful or neighborly. It was in no way reassuring to hear them hesitate and deliberate on the choice of adjectives supposed to be commensurate with the disrepute they held me in. So I rode twenty miles to see the professional in town and engaged him to let me have $5 worth of his best wisdom.

This was, however, a mistake well nigh calamitous, for to begin with he did not know what Nos. 1 and 2 were, and I was really mixed up and disturbed at his flighty way of making remarks evidently not of a complimentary nature. He took a good picture with my own camera and gave me what he called pyro, also what he called hypo, as as well as another drug I cannot now recall the name of. I forgot his instructions, but I doubt if I did otherwise than as he told me in *some* of my experiments, mixing the three as seemed likely to prove successful. One result was the very worst pair of hands any human being ever wore, black enough to make the dark-room radiant with light by comparison and worse than all, the worry over my failures, the strain of rubbing up my mathematics to find variations on those chemicals to the (x + y) m + n, etc., power affected my great pneumo-gastric nerve, threw my whole system out of gear, and I had dyspepsia that would have been deemed too great punishment for a grave robber.

I began to have serious doubts if my camera was the kind I wanted, or in fact, if it is of much value anyway. My anticipated joy with it has been a delusion and a snare, and had I not so utterly blasted the former respect I held in this neighborhood by trying to photograph, I should give it up and be a base-ball umpire or something else *easy*. But I have started on this wild career of innocent, health-restoring amusement, and to gain back the respect of the community and avoid a lunacy commissioner sitting on me, I have no recourse but to, Excelsior-like, keep on. The camera I had, I have partly consoled myself by giving to a man I feel a deep hatred for. I have ordered the cashier of my bank to send all I have there now to a concern whose advertisement I saw lately who say they are the largest in the world. This company will, no doubt, when they hear of my trouble and my earnest desire to get back my former good reputation, give me something that will take photographs. Let this experience be a solemn warning to all unacquainted with the photographic fad! I believe every one who gets the disease don't tell the others. Its like the old cherry-colored cat show Everybody who went into the tent and paid their money to see a cat the color of (black) cherries came out looking so thoroughly happy that every one else went in and got fooled too. If there *are* any who don't own a camera let them not say that *I* have kept this horrible secret and allowed them to walk into the halter with their eyes shut. Why even the man I gave that fool camera to has caught the disease and pretends to be so happy over the camera that he couldn't stand it if he felt any better. He says some holders (whatever they are) had to be bought as I had probably left mine down in the city and has actually possessed himself of a great many terms used in the book. He says I have been trying to develop my ground-glass, he guesses, and that the cap was stuck on the lens so tight that it could never have been removed by me. Well, I am not, I admit, quite conversant with the language he employs, but you see its all the *disease*, he has to pretend he knows something about it and that he likes it. What if the "cap" *was* on or what if the ground-glass *was* developed, I'll warrant I did it methodically and well, and for all that I *never* got any pictures. When my new apparatus comes I shall again go to work (not play) at it and try to live down my disgrace.

B Jabers.

PHOTOGRAPHY IN RELATION TO PAINTING.

[Read before the Photographic Convention of the United Kingdom.]

IN commencing this paper on "Photography in Relation to Painting," I feel that I cannot do better than give the definition of both painting and photography. Painting is a representation of objects on a flat surface, painted by the hand by means of brush, pencil, or other tool being under the will of the artist, unrestricted in fancy, subject, color, form, place, or period. Photography is a representation of objects on a flat surface, restricted to the absolute reality of form present, as rendered by the lens on the sensitive plate in the camera, being only under the control of the photographer in development and in *choice* of subject, form, place, focus, and length of exposure, and in some few cases light and shade.

Such being the definitions of painting and photography, we can now see how very limited are our resources in photography, compared with painting, for producing a picture that shall have qualities that give it an art value, for it is not a mere tran-

script of nature that we require, but a picture containing some sentiment or idea that shall give pleasure to those who see it, and in nature there is in both figure and landscape an endless wealth of beauty that we can render, if we see nature with the knowledge of what the camera will do and what it will not do.

Photography being limited to reproducing the objects present without color (which in painting is often its chief charm), we must therefore find out how near photography approaches painting by comparing reproductions of paintings with the work of the lens. Unfortunately, photography is severely handicapped by the inability of the sensitive plate to render the true tone value of all colors, and this inability adds very much to the difficulty we have in judging Nature as she is represented in the photograph and in painting; but even with this defect the result in photography is very close to the true rendering of Nature, and will be even more so in time as photography advances. I need not point out the defects of photography with regard to rendering color into black and white, for we all know them. In painting, certain colors have a different tone value to some artists than to others, and, when their pictures are rendered into black and white, fail to recognize the likeness of effect to that of the painting.

Both in photography and painting we have to consider, in the construction of the picture, the possibilities of its being a success, its story, composition, light and shade, and all the various items that make its being. A painting or photograph must have some reason for existing, some object or story, and this must be the one thing that all else is to be subservient to. In a picture the artist tries all he can do to keep your attention fixed on his principal figure or object, and to do this keeps all his what we call "focus" on it, and all else is kept down both in tone and sharpness, so that the eye shall not wander away and become confused by the surroundings. Many pictures and photographs are spoiled by the want of concentration of interest, simply by forgetting this simple rule, in painting by over-elaboration of unimportant objects, brilliant color or strength which kills the principal object in the picture; in photography, by microscopic focus, which puts everything on an equality with the principal object, accentuating things that are unseen by the eye, for the eye sees the thing that is, not what it is made of; a tree is made of many leaves, branches, etc., but the eye sees them as a mass of foliage, not as individual items.

Many pictures are spoiled by want of contrast of light and shade, for it is a well-known rule in art (and art applies to photography as much as painting) that, except in exceptional circumstances, there shall be no accessory object lighter than the principal object of the picture, or, if that is a dark, darker than this object. In this was the secret of the great success of the old Flemish artists, Rubens, Vandyke, Rembrandt, etc. Both photographers and artists cannot do better than carefully study the way in which these masters have managed the light and shade, both in portraiture, figure, and landscape.

The next thing to consider is the composition or arrangement of the figures or objects that constitute the picture or photograph. In painting, this is comparatively easy, as the artist can place his figures where he pleases, and use any kind of composition. But the photographer is entirely limited to a more or less equal plane of focus, owing to the distortion the lens gives in figure subjects, for what is simple foreshortening in painting often becomes absolute distortion in photography.

Composition not only applies to the arrangement of the figures, but also to the light and shade, which must be so managed that it gives value to the lines of the figures, and in figure and landscape pictures so combine them that they become as a whole. With pure landscape photography, composition is impossible, as you cannot arrange your objects; you can only select a view, and can only use the knowledge of composition to help you to choose the best view. In landscape and figure pictures very much can be done in photography, but you are limited to simple arrangement in a selected landscape, which has to be taken just as it is, and which, in painting, would be so altered and arranged that it would carry the lines of the composition in harmony with the figures.

Light and shade in landscape, which are so important in painting, are quite as important in photography; but here, again, we cannot arrange like the artist, but are quite dependent upon the effect at the time of exposure, which can sometimes be chosen. It is a very great misfortune that photography will not render the true effect of cloud and sky, combined with landscape, for, until this is possible, we must depend upon the sky from another negative, which, more often than not, is entirely unsuited to the landscape, and also is, as a rule, printed far too heavy.

In painting, besides the great charm of color, the artist has one which is, perhaps, greater, that is, "ideality," or the rendering of the image of the mind as opposed to the reality. Idealism in painting often merges into mannerism. There are many

living instances of this, the weary repetitions of the same form and the same effect. In photography the danger of mannerism is greater, as, if we use the same stop to the same lens, and the same printing method, our photographs must necessarily look more or less alike, only the difference of form. I suppose it will always be so, at least, with the majority of workers who only have one lens. Painting is very much like handwriting : one can recognize the author, but photography changes in character with every different kind of lens, so that it ought to be possible to escape from the more glaring faults of mannerism.

Impressionism must not be confounded with idealism, for impressionism is the rendering of the way the object or scene appeals to you—how you see it—whereas idealism is the correcting or altering nature to suit what you consider true beauty. Impressionism in photography is not only possible to a very large extent, but the results are very beautiful, and *do* depend in a very large measure on the artistic aptitude of the photographer and the knowledge of his lens ; and though, to those who are unable to see the beauties of nature (and they are legion), it may appear entirely chance work, yet those who use knowledge both of nature and photography know that the results are precisely those that were aimed at.

And now we come to what is considered to be the great strength of photography, its imitation of form. In painting it is often color that expresses form, such as grass, sand, and many other things. There the color tells what it is, and the mind is satisfied; but in photography, unless there is a *sufficient* indication of form, the representation is vague, and leaves the mind wondering and unsatisfied. It is therefore necessary to the proper understanding of a scene or object that the definition of form shall be such that the objects are recognizable ; but how far it should be carried is entirely a matter of individual feeling, for, as in the case of idealism, the perception of form is in the mind. To one person form is soft and without line, to another the feeling of form is so strong that he can only express himself by sharp outlines—it is only a matter of thought, for in nature there are no outlines. The impression of nature is to me a soft blending of color and tones, quite unlike the rendering given by what is termed "a nice, sharp photograph." One of the great difficulties both painters and photographers have is the introduction of figures into landscapes so that they shall not intrude or attract the eye from the *motif* of the picture. As a rule, we find in the best landscape pictures that, if a figure is introduced, it is placed in the middle distance, and is used more to serve as a known size to give grandeur to the landscape. Turner was a master at this, and, though he defied this method in some of his pictures by placing the figures in the immediate foreground, yet he did it so well that they appear away from where the spectator stands, and therefore practically in what is the middle distance. Of late years it has become more the fashion to introduce figures in the foreground, so as to give a title to the picture, but it is very difficult to do so without sacrificing the landscape to the figures. Of course, these remarks do not apply in the case of what are called "*figure* and landscape subjects." for there the figure is the important object and the landscape only accessory.

I am afraid that my paper will not be considered complete unless I make a few remarks on motion as rendered by the camera and by the artist. I know that it is dangerous ground to tread upon, but I must needs venture. In the expression of movement in painting, the artist does not endeavor, like the photographer, to obtain a perfectly still look or an action that he cannot see, but such an action that shall express the characteristics of the movement he wishes to represent, whether it be running, leaping, falling, etc., and obtains that look of movement not only by the position of the figure, but also by means of flying drapery. Now, in pictures by many of the great masters, this drapery is painted in indistinct folds *purposely* to give the effect of movement. There is a very fine instance in the National Gallery, London, "St. George and the Dragon" (by Tintoretto), perhaps the finest example of movement ever painted. To say that movement must be expressed by movement expresses what I wish you to understand. In this picture not only do the figures seem to be moving, but the drapery vibrates ; but still it has not the same kind of look that photography gives of the blurr of movement, but it is of a character that I am afraid photography can never imitate. Another instance of the rendering of movement is Vandyke's drawings of the condemned being cast into hell. The mass of humanity seems to fall headlong. The effect of movement is indescribably true. When an artist looks at an instantaneous photograph of the movement of a figure, the chances are that he has never even dreamt of that representation being what it is intended to represent. The very fact of its being a *perfectly* arrested action takes away all sense of movement, and makes it only a pose. In landscape the expression of movement cannot be expressed by a perfectly sharp image. How often one hears the remark, "This is not good, as the trees have moved." Yet to an artist it is often the

best quality that photograph possesses. Turner, the great master of movement, always got the effect of wind in his trees, waves, and sky by indistinctness of detail.

Sea and sky in photography are often perfectly representatives of movement. One need only see one of Dresser's seascapes to acknowledge this; but there are many other photographers who only give the arrested motion, the stillness of death, for it has the form but not the breath of life.

The imitation of nature should be in photography what artists have endeavored in all ages to paint—that is, the life of nature not as a still, sharp microscopic image (for the time is past when we were content with seeing nature under this false light, but as a representation of life as seen by the eye, for what is false to the eye cannot appeal to the mind. It may be a perfect photograph as far as exposure, development, and printing can make it, but, unless it has that something which truly represents the life of nature, it is worthless in an artistic sense.

Arthur Burchett.

COGITATIONS.

The great variety and the perfection of accessory apparatus for the amateur photographer, not to include the professional, renders almost needless at this day any suggestions outside the exposing, developing and fixing of the commercially prepared plate.

Indeed, the mechanical feature of photography seems to admit of scarcely any further improvement, and it must needs be from an unlooked-for direction to attract any special attention.

Useful and numerous improvements in any branch of the world's work are the means of bringing that particular branch into public notice, and if the character of the art permits, it becomes a popular pastime for that class of people having spare time and money, or a certain fondness for science. While the flood of novelty is maintained the tide of popular success is constantly on the rise; but tides must fall in order to rise again; in the course of the fall much valuable material is left to be carried higher by a succeeding rise, while a larger portion is drifted back and forth or carried out of sight.

So we may observe amid the army of amateur photographers a few who pursue the art for a scientific love of it, studying and mastering principles—gaining knowledge. In contrast with these one need not go far to see the giddy amateur, down't yer' now; who don't *know*, only "Carbway said so." These really excite one's pity when we see what possibilities for real enjoyment are missed through their careless ignorance. The dashing, roaring stream soonest runs dry.

The amateur photographic "craze" has held its own remarkably, and the astonishing variety of inventions which have been produced to meet the wants of the amateur are but a part with the progress of our century. When the youthful amateurs of to-day begin to feel their years, and their children need some hobby which can be recommended without reserve, we shall probably see photography assume a standard position; and a new corps of amateurs who have been carefully instructed, will be criticizing each other's work from an advanced standpoint as artists. And this beautiful, wonderful art-science will have attained its proper niche among the divine gifts to man.

C. D. Cheney.

Notes and News.

Photographic preparations are already being made for the total eclipse of the sun, which takes place in April next year, says the editor of *The Photographic News*. On the east coast of Chili the line passes some 200 miles north of Santiago, and the totality will only last one minute and a few seconds. The Lick Observatory authorities have sent here an observer to photograph the phenomenon. The Harvard College Observatory has a station in Peru where photographs will be made, and a photographic expedition from England will be sent to Brazil and to Senegambia under the direction of a joint committee of the Royal Astronomical Society, the Royal Society, and the Solar Physics Society.

A large telescope is to be a feature of the Paris Exhibition of 1900. But to make a considerable departure beyond such instruments as the Lick refracting telescope, with its object glass of three feet in diameter, and Mr. Common's five feet refractor, would involve an enormous expenditure of skill and labor. With the best existing telescopes the moon can, under very favorable atmospheric conditions, be seen as if it were about 100 miles from the earth. The French talk of attempting to show it as if it were four miles! Even if the required telescope were constructed, it would probably be quite futile to erect it near Paris—or, indeed, any other large city.—*Photographic Work.*

Senator Kenna is without doubt one of the best amateur photographers not only in the city but in the country, for combined with his ability in this line is a natural love of the art, without which a great degree of success can hardly be looked for. When his present residence on Capitol Hill was built about two years ago, one large

room on the top floor was planned especially for the accommodation of his photographic outfit, which is as complete as that of a professional. There is a skylight with adjustable slides, beneath which hang a series of draperies and all the paraphernalia necessary for effective backgrounds. One side of the apartment is partitioned off as a dark-room. On the walls and about the house are countless photographs of the Senator's colleagues, members of the family and places he has visited. The shooting lodge in the mountains of West Virginia has afforded frequent opportunity for picturesque bits, taken when the dogs were assembled with the unkempt specimens of ebony humanity which always show up when a coon hunt is in prospect. There are some charming glimpses of the Potomac, caught during fishing trips with three manly boys, who count that day one of perfect happiness on which they are selected for their father's companions. The fourth and youngest son, the five-year-old namesake of Senator Joe Blackburn, is the beauty of the family. A picture which looks like a fancy sketch represents the little fellow in dimpled nudity sitting astride a great bronze turkey cock, his curley head thrown back in laughter as he snaps his finger in the air.

A transparency of the late Senator Beck, which now hangs in one of the committee rooms in the Capitol, is the work of Senator Kenna. General Sheridan sat to him for his picture a short time before his death, but no print was ever taken, as the plate was blown over by the wind and shattered beyond repair.

The curious invention of Capt. Fraysseix of the French Navy, called the *tir optique*, bids fair to create a complete revolution in modern artillery. It has been thoroughly tested during the past two years on board several vessels of the Mediterranean fleet, and recently on board the "Achéron." The commission appointed by the Minister of Marine have unanimously reported in favor of its adoption. A complete description of the thing is, of course, out of the question, because it is a secret to be kept as long as possible from the Triple Alliance; but enough of it has been given out to prove that French artillery is now married to photography.

In other words, the invention consists in the application of the "dark-room" to the operation of aiming. The image of the object to be hit, passing through a lens, is reproduced upon a screen. The pointer looks at this image, just as the photographer would look at an image upon his ground-glass. He brings the object to the central point of the screen; and then he fires. In this way the shot or shell reaches the object with accuracy. The results of the experiments are said to be marvellous. But another great advantage in this new method of firing consists in doing away with the necessity of long training for gunners. Any intelligent man can go into the "dark-room" and astonish himself with the extraordinary perfection of of his aim. And now there is a movement to introduce this precise method of killing into the army. It is to be applied to the siege guns and the field artillery; and possibly before long it may be brought to sufficient perfection to be used by the infantry. At all events the firing in the future war promises to become, in the language of Marshal Canrobert, "un peu désagréable."—*Editorial, New York Sun.*

Queries and Answers.

341 SAINT LAZARE.—Will you kindly tell in the Query and Answer column of PHOTOGRAPHIC TIMES, how to proceed to photograph coins or medals?

341 *Answer.*—Coins and medals are preferably photographed in original size, and you will consequently want a camera with draw of twice the length of the focus of your lens, a rectilinear or aplanat. Place the object in a strong but diffused light in such a manner that the light falls obliquely upon it, so that all relief portions of it cast a distinctly visible shadow. If the coin is new and bright, avoid all reflections from outside objects.

A small stop, say F/22, secures sharpness, and long exposure perfect detail.

342 MRS. R. A. L. wishes to know of an infallible remedy against cockling of prints. Non-cockle formula No. 124 of your "Annual," Stillman's paste, and others, have been tried, but the mounted prints will cockle after all. What shall I do to keep my prints flat?

342 *Answer.*—Moisten the mount, but do not wet it, use any good paste, Higgins' for example, turn the mounted print face side down, and dry between blotting paper under pressure.

343 THE BLUES.—My cyanotype paper, prepared according to formula No. 106, "American Annual of Photography" for 1892, changes color very rapidly from the greenish-yellow to a decided green-blue, in from four to six days most frequently. Is there no remedy to keep the paper intact for a length of time, say for two or three months?

343 *Answer.*—Add to 3 ounces of the mixed solution 2 grains of potassium bichromate. With this addition we have had paper to retain its color and sensitiveness for four and five months, but it must be well guarded against the influence of moisture and light.

344 BRADFORD.—Why is it recommended to add hydrochinon to eikonogen developer?

344 *Answer.*—In case of over-exposures, or when from other causes intensity refuses to build up, add a small amount of hydrochinon to the developer. Through the action of both of these agents details and proper printing density are equally well produced. The S. P. C. hydrochinon developer in one solution has been especially prepared to act as an intensifier. Add of it about one fluid drachm to two ounces of developer; but if flatness is the cause of over-exposure, do not omit bromide of potassium.

345 WM. G.—I have printed and toned three copies of the enclosed portrait; they all looked bright and strong when printed, but when placed in the toning bath they gradually fade to the dull gray of the copy sent. My toning solution has been mixed for four months (*i.e.*, the gold, 15 grains to 4 ounces water). Of this I made a toning solution, 8 ounces water, ½ ounce gold, making it alkaline with bicarbonate soda.

345 *Answer.*—The trouble encountered may be caused by the gold solution. You say it is four months old. If the solution has been kept in daylight for so long a time, there is every probability all the gold has been liberated by the action of light, and has precipitated in metallic form.

Make a fresh gold solution, keep cautiously in the dark, and try again.

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pp. 113, paper..... 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English). Vols. I. and II. (except No. 18), 1890, 1891.

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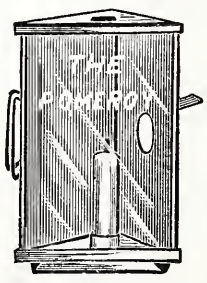
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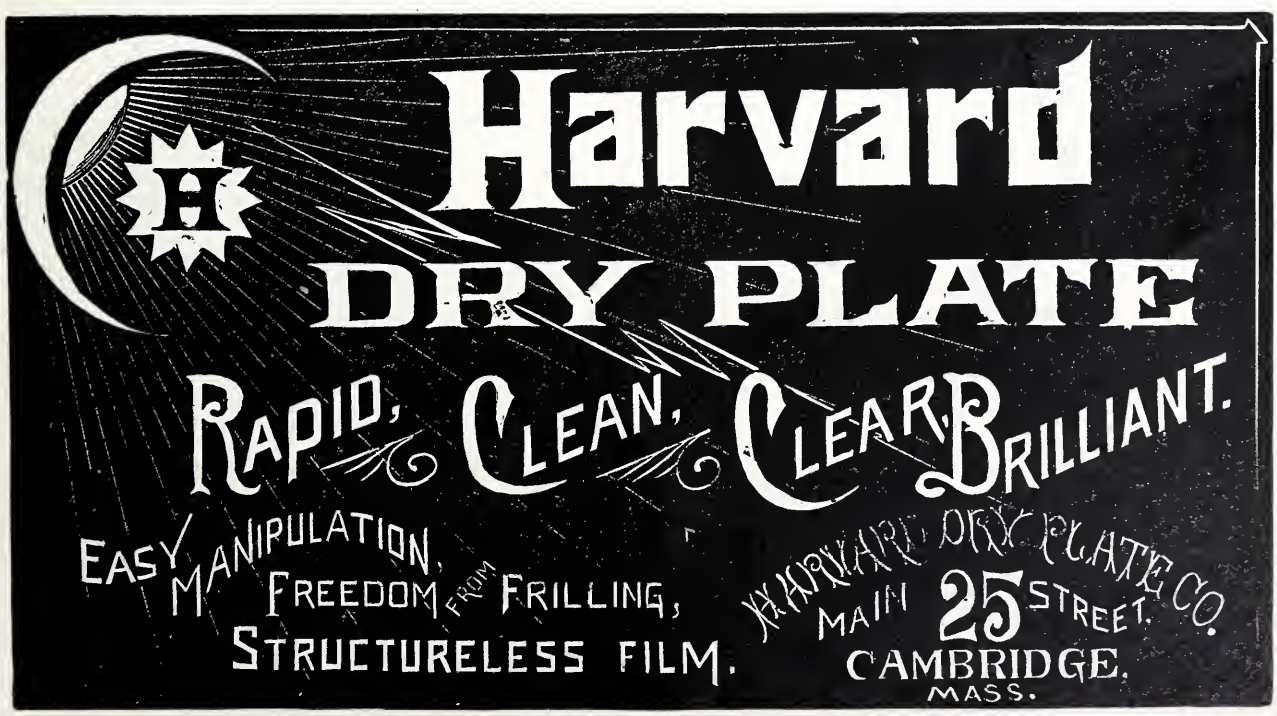
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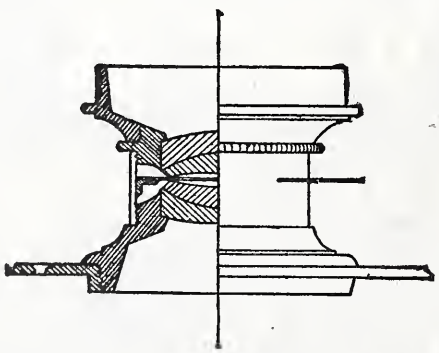
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34 Bromfield Street, BOSTON, MASS.

MORRISON WIDE-ANGLE VIEW LENSES.



These lenses are absolutely rectilinear; they embrace an angle of 100 degrees, and are the most rapid *wide-angle* lenses made.

No. of Lens.	Diameter of Plate.	Equivalent Focus.	Price.	
0..1	inch...3¼x4¼	inch... 2½	inch...each, $20.00	
2..1	" ...4 x 5	" ... 3½	" ... " 25.00	
3..1	" ...4¼x 6½	" ... 4½	" ... " 25.00	These 5 sizes will fit into 1 flange.
4..1	" ...5 x 8	" ... 5½	" ... " 25.00	
5..1	" ...6½x 8½	" ... 6½	" ... " 25.00	
6..1	" ...8 x10	" ... 8	" ... " 30.00	
7..1½	" ...11x14	" ...10½	" ... " 40.00	These 2 sizes will fit into 1 flange
8..1½	" ...14x17	" ...14	" ... " 50.00	
9..1½	" ...17x20	" ...17	" ... " 60.00	These 3 sizes will fit into 1 flange.
10..1½	" ...20x24	" ...22	" ... " 80.00	
11..1½	" ...25x30	" ...28	" ... " 100.00	

☞ Nos. 1 to 6 are all made in matched pairs for stereoscopic work. The shorter-focused lenses are especially adapted for street and other views in confined situations. For general purposes, a pair of No. 5 lenses will be found most useful.

FOR SALE BY ALL DEALERS.

A. M. Collins
Manufacturing Company

would call attention to Dealers in Photographic Supplies to their superior facilities for the manufacture and distribution of Photographic Cards, claiming that they have always in stock, or are prepared to make promptly to order, a greater variety and much larger quantity of Cards of superior quality than any other establishment in this or, perhaps, any other country.

Warehouse, No. 527 Arch Street,
Philadelphia.

Stereoscopic Outfit for Instantaneous or Timed Exposures.

We are now constructing Steroscopic Outfits consisting of

A 5-8 Stereoscopic Camera,
One pair of matched Waterbury "A" Lenses fitted with the Stereoscopic Elite Shutter,
One 5-8 light-weight double dry Plate-holder.
One No. 2 Scovill Extension Tripod,
One Wood Carrying Case,

For the moderate price of $27 00.

We will furnish a pair of matched Waterbury A Lenses, fitted with the Stereoscopic Elite Shutter, for - - - - - - - - - - - $20 00

The Elite Shutter recommends itself on account of its simplicity of construction, rapidity of motion, and its extremely low price.

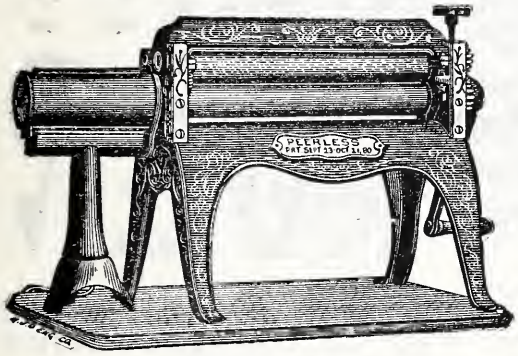
The Waterbury A Lens, with stop f/25, covers a stereoscopic plate to perfection, and with a plate of average high sensitiveness will produce correct exposure by the very rapid speed of the "Elite."

The Shutter is arranged for instantaneous as well as timed exposure, is neatly and accurately made, and does not get out of order.

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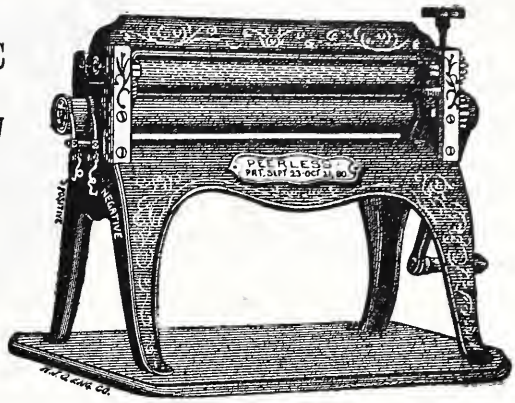


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OIL, GAS, or ELECTRICITY.

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For Aristo Paper our machines cannot be equalled.

Don't buy until you have examined the **merits** of the **Peerless.**

ASK YOUR DEALER FOR IT.

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ARISTOTYPE PAPER.

A PERFECT SUBSTITUTE FOR ALBUMEN PAPER.

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It does **not** stick, nor does the surface of the print rub off.

THE PERFECTED BRADFISCH TONING AND FIXING SOLUTION is recommended for use with Aristotype Paper.

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There are other papers now manufactured which are claimed by interested parties to be the same or alike our paper.

This may apply to Gelatine Papers in general, but we claim for our product characteristics which no other paper possesses, and we advise all to specify **OMEGA** and accept no substitution. Yours respectfully,

The C. E. Hopkins Co.,
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NOTE. { Our reduction in Prices.
Our Paper now gives white high lights and will not yellow in Toning.

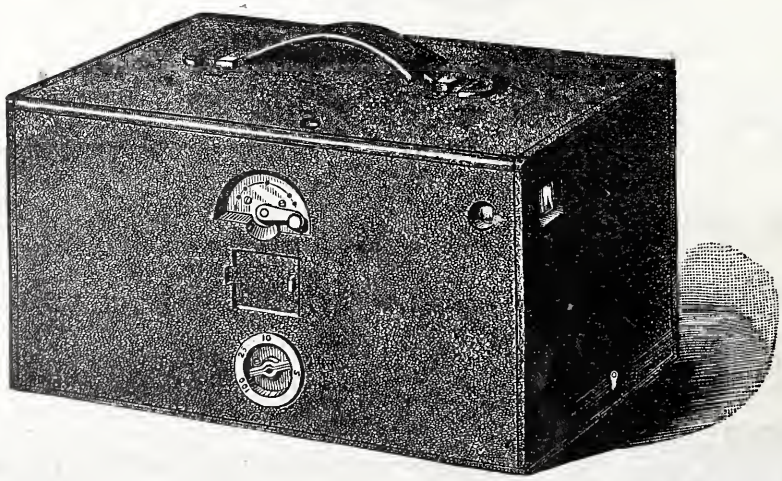
The Bristol

A NEW MAGAZINE CAMERA,

CARRYING TWENTY-FOUR 3¼ x 4¼ FILMS.

(Just the thing for LANTERN SLIDES.)

The Handiest Simplest Most Effective



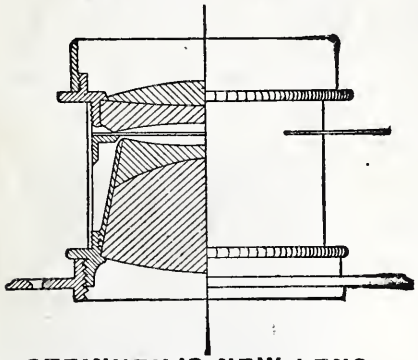
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VERY COMPACT AND EASY TO WORK.——AN EXCELLENT LENS.

Send for a copy of "THE BRISTOL" Manual, which is fully illustrated, and perfectly describes this unique Camera.

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THE UNRIVALED STEINHEIL LENSES.



STEINHEIL'S NEW LENS.

These Lenses not only maintain their old-established reputation, but continue to lead in the field of progress. Made in six different series for every description of work. Special attention is called to

Series No. II, Patent Antiplanatic, the newest conception in rapid lenses. For Instantaneous Portraits, Large Heads, Full Figure Groups, Architecture, and Landscape. A marvel of illumination, depth and rapidity. No Photographer or Amateur should purchase a lens before testing a Steinheil, Series No. II. See accompanying cut.

Series No. III, the famous Aplanatic tube, the illumination of which has been increased, and which is recommended for large Portraits, full-size Figures, Groups, Architecture, and Landscape.

Series No. VI, Wide Angle Aplanat, which has no rival for copying Maps, Charts, Paintings and Engravings. It is the Photo-lithographer's favorite.

Send for Illustrated Catalogue and Price-List to

THE SCOVILL & ADAMS COMPANY.

Edwards's Special Transparency Plates.

For LANTERN SLIDES, Window Transparencies, and Reproductions in Black-and-White.

These Plates make the most perfect Lantern Slides, either by contact printing by artificial light or by means of the camera from larger or smaller negatives and give, at will, either engraving black or rich warm purple tones; they are also specially suitable for reproductions of line subjects for photo-lithography, when used for this purpose with our improved Pyro Transparency Developer, they give any desired density with perfectly bare glass in the high lights.

Price, 3¼x3¼ (English Lantern Size), 75 cts. per doz.

Edwards's Special Pyro Transparency Developer.

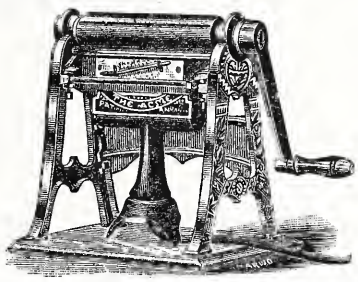
For Lantern Slides and Transparencies.

By means of this new Developer the most perfect Transparencies can be obtained on suitable Dry Plates with the greatest facility. It is the only Developer yet discovered which will produce (on Rapid Gelatine Plates) Lantern Slides of the highest class with RICH WARM TONES and perfectly clear glass in the highest lights.

Price, Two 8-oz. Bottles in Case, $1.50.

B. J. EDWARDS & CO., Manufacturers.

For Sale by THE SCOVILL & ADAMS CO.



PATENT APPLIED FOR.

Acme Amateur Rotary Burnisher.

NOTE.

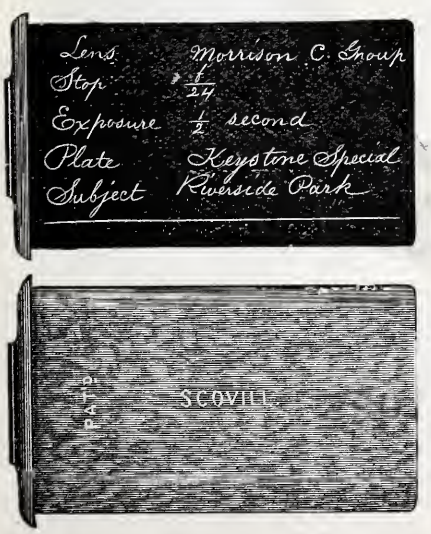
Quickest Heater in the world.
Saves seventy-five per cent. of gas, oil or alcohol.
No sweat, no smoke, no smell.
Acme Horizontal Thermometer attached.
No blistered prints, uniform results.
Will burnish an 8 x 10 and all sizes under.
Simplest Rotary Burnisher ever made.
One-hand wheel adjustment.
Full Nickel Finish.
Guaranteed in every particular.

PRICE, OIL, GAS, OR ALCOHOL, $15.00.

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MANUFACTURED BY

ACME BURNISHER CO.,
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REGISTERING SLIDES.

(PATENTED.)

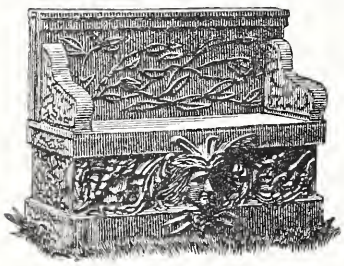
In the pleasure or excitement attendant upon picture-taking, holders slides have been so changed about that the note-book afforded no clue to their identity. All photographers, whether professional or amateur, who have in time past puzzled their brains in the endeavor to solve such vexatious questions as these—

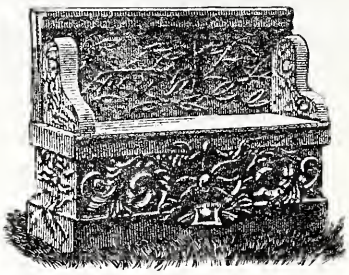
"Have I or have I not exposed that plate?"
"If exposed, was the plate used for that prized picture?"
"Shall I incur the risk of making a double exposure?"

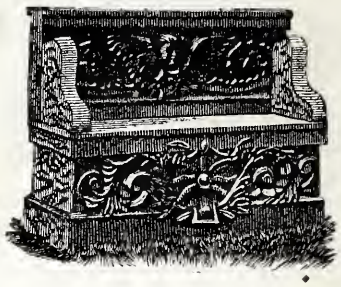
henceforth will have themselves only to find fault with if they do not procure and use in their dry-plate holders the patent registering slides, or as they have been called "Record Slides." These can be written upon with slate or lead pencil *ad libitum*, and the writing erased without injury to them.

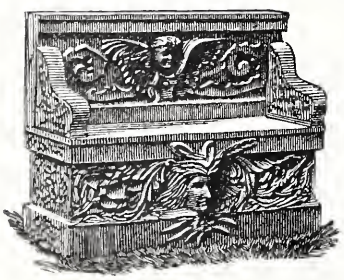
Registering Slides *will be supplied with new American Optical Co.'s Dry Plate Cameras and Amateur Outfits up to* 10x12 *size without addition to price list.*

SOMETHING NEW.









The Eldorado

WALL and BENCH COMBINATION.

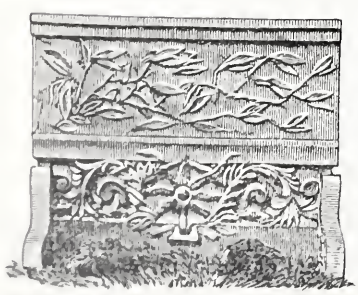
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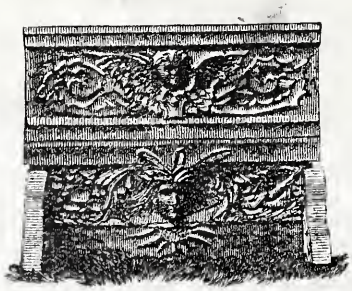
Makes Eight (8) different Combinations.

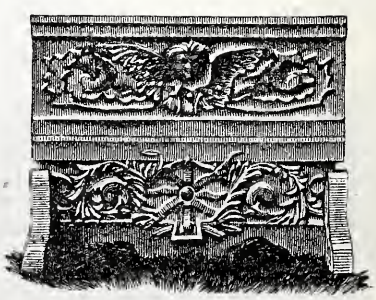
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PRICE, - - - - $15.









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STAMP PORTRAITS.

These are the only stamp portraits that are gummed and perforated, and being the exact size of ordinary U. S. postage stamps, photographers and others will find them an interesting novelty in advertising their business, as they can be mounted on business and visiting cards, letter-heads, etc.

We also make a size four times larger than the stamp pictures. Send for samples and prices, which will be furnished on application.

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N. E. Cor. 8th & Locust Sts.
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INGLIS & CO.'S

ENLARGEMENTS IN

Black, Sepia and Water Colors,

HAVE A DISTINCTIVE CHARACTER OF THEIR OWN.

Salient points of our Water Colors are faithful retention of likeness, delicacy of coloring and brilliancy of tone.

2637 STATE STREET, Chicago.

SEND FOR PRICE-LIST.

CLEMONS' NEW MATT-SURFACE PAPER.

SOMETHING NEW UNDER THE SUN—A REVOLUTION IN THE ART OF MANUFACTURING.

After many years of scientific research a preparation for the salting of plain photographic paper has been discovered, by which method the finest printing results are obtainable. The advantages are apparent to all.

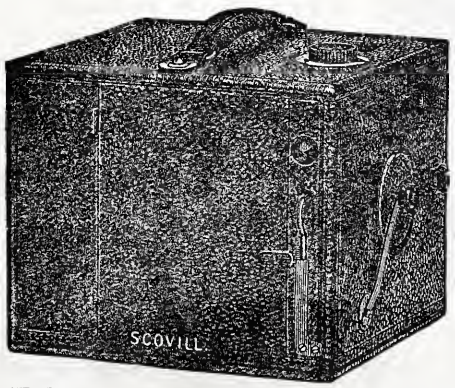
I.—Constant use will not discolor the silver bath.
II.—Will produce the finest detail in printing.
III.—Any desired tone may be obtained from sepia to jet-black with less gold than ever before.
IV.—The *"New Matt-Surface"* paper when sensitized will keep fresh for a long time if properly stored.
V.—The price has not been advanced.

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THE SCOVILL & ADAMS COMPANY,
423 Broome St., New York.

Sample Sheets, by mail, 10 cents each.

THE WATERBURY DETECTIVE CAMERAS.



MANUFACTURED BY THE AMERICAN OPTICAL CO.

Timed and Instantaneous Photographs. This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size, It is

The only Detective Camera made for plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

The Recessed Finder shows *the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

The Focusing Scale is beside the Finder, where it may be readily seen and adjusted.

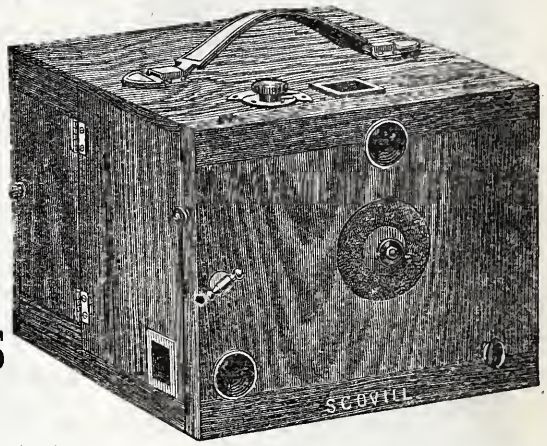
Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders	$25 00
5 x 7 Waterbury Detective Camera, with 2 Double Holders	40 00

FOR SALE BY ALL DEALERS.

IMPROVED KNACK KNACK

DETECTIVE CAMERAS



To MEET the demand for a cheap Detective Camera within the reach of the youth, and of those who want to make but a moderate investment in photographic appliances, we have introduced the KNACK CAMERA, which is certainly lighter and more compact than any other cheap detective camera in the market, and what is still more important, has a much more expensive and more perfect lens.

This Double Combination Instantaneous Lens, with Interchangeable Stops, when bought separately costs as much as the whole camera.

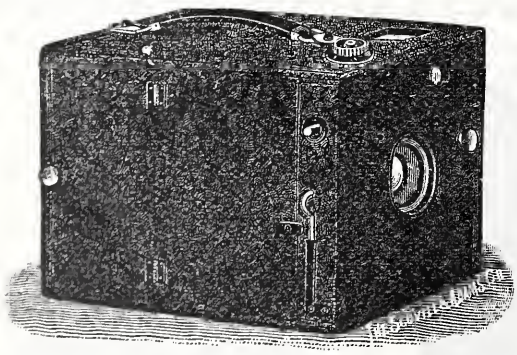
The whole front of this camera is hinged, which is a great convenience. The camera has a Recessed Finder, an Instantaneous and Time Shutter with Speed Regulator, Cap for timed exposures, and one Double Dry Plate Holder.

	PRICE.
No. 1 4x5 Antique Oak, Knack Camera,	**$15.00**
No. 2, " Leather Covered, " "	**17.50**

MANUFACTURED BY THE SCOVILL & ADAMS CO.

FOR SALE BY PHOTOGRAPHIC MERCHANTS.

THE TRIAD CAMERAS.



When a discovery in photography is announced, it is claimed that the new article will displace everything then in use. These claims are seldom justified. There is generally found a place for the new article, if it has any value, and for the old as well.

For commercial purposes, for instance, such as the reproduction of photographs for illustration, it has been demonstrated that collodion "wet" plates are better than dry plates. For the use of the amateur, on the other hand, dry plates are much better than wet plates. Though many new supports have been tried, the sale of glass dry plates is larger now than ever before. Where only a few pictures are to be made on one day's outing it is likely that the experienced photographer will always use dry plates or cut films.

If he is going away for a summer vacation, or for a trip abroad, and expecting to to make a large number of pictures, he will procure a roll-holder loaded with continuous films. This will save him the bother of developing while he is away from home, and of changing plates; but he cannot well know what results he has secured until he has exposed the entire roll and has had it developed

For those who want to use celluloid instead of glass plates, and are not willing to trust to good luck in the exposure of the complete roll of film, we offer with the "TRIAD" camera a *double* film holder which is very light. If the amateur carries six of these holders (loaded with twelve films) he is well supplied for one day · that is, if he is prudent and aims to get only really good pictures. At night, either in a photographic studio or in his own hotel room, the exposed films may be put away into safe receptacles, and another lot of unexposed films substituted for them.

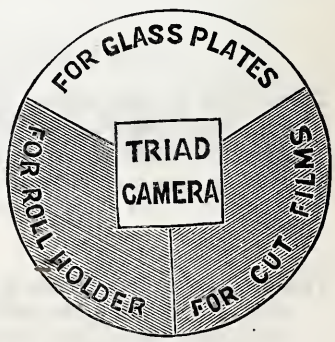
The TRIAD Camera is fitted with the latest improved Roll-Holder for continuous films, two double holders for glass plates, or two double film holders, if the latter are preferred.

This Camera is fitted with an Instantaneous Rapid Group Lens with easily interchangeable diaphragms —the most satisfactory detective camera lens ever made. It has a finder so constructed that the image is the same as that on the ground glass, though of course it is proportionately diminished in size. Usually the finder in a Detective Camera shows simply the image on the plate, but not its relative size and proportions. The Instantaneous Shutter in this camera is provided with a speed adjuster which works from the outside, and the focusing device and scale are conveniently near the finder. This is very important when one is trying to photograph rapidly moving objects.

For timed exposures use a tripod (easily adjusted to the camera by the plate underneath), open the door at the back, so that the image on the ground glass can be easily seen, set the shutter with the opening opposite the lens, and bring into use the felt cap which fits the opening in front of the camera. By complying with these simple requirements you have a complete camera for timed exposures.

	Price complete.	Price without Roll-Holder.
4 x 5 Triad Camera, with Roll-Holder, two Double Dry Plate Holders, or two Cut Film Holders	$35 00	$25 00
Extra 4 x 5 Triad Double Dry Plate Holders		1 25

Holders for Cut Films, same prices as above.



TRADE MARK.

For sale by all dealers in Photographic Materials and the Manufacturers,

THE SCOVILL & ADAMS CO.

AMATEURS, ATTENTION!



Please remember that in speed and every desirable optical quality no lenses yet constructed can rival

Voigtländer's Euryscope Lenses,

which are made in SEVEN different styles.

BENJ. FRENCH & CO.,

319 Washington St. BOSTON, MASS.

Revised price-List sent on application.

Correspondence solicited.

NEW YORK PHOTOGRAVURE CO.,

NO. 137 WEST 23D STREET, N Y.

PHOTOGRAVURE.
PHOTOGELATINE.
HALF-TONE. . .

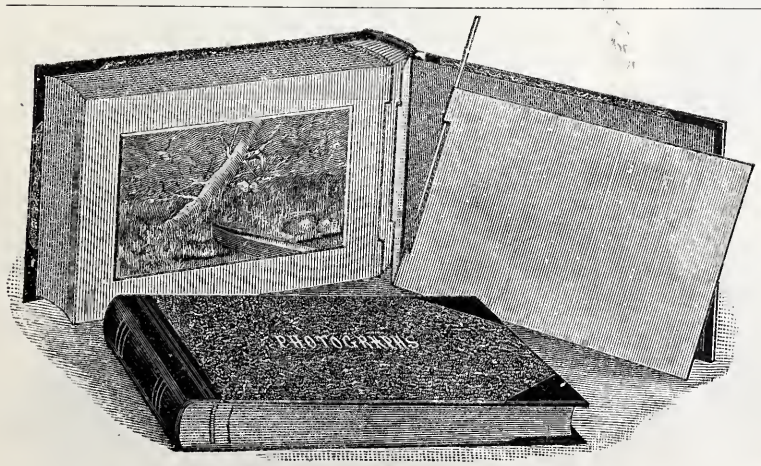
ERNEST EDWARDS, PRESIDENT. Inventor of the Heliotype Process. Manager, Heliotype Printing Co., Boston, from 1872 to 1886.

W. R. STANBERY, SECRETARY.

"SUN AND SHADE," an Artistic Periodical.

ART DIRECTOR, A. V. S. ANTHONY, for many years Art Director for Ticknor & Fields, and Fields, Osgood & Co.

"Plates of the highest merit both in design and execution."—THE INDEPENDENT, New York.
"The highest level of achievement in photogravure work."—THE WORLD, New York.
"Photogravures of the highest quality "—THE HERALD, New York.
"Possessing the quality of drawing in India Ink or Sepia."—THE SUN, New York.



IMPROVED SPRING BACK

ECLIPSE ALBUM.

PRICE LIST.

IMPROVED SPRING BACK WITH TWENTY-FOUR COLLINS CARDS. WHITE AND GRAY.

No. 1	6 x 7	cards	$2 25
No. 2	7 x 10	"	2 50
No. 2½	10 x 7¼	" upright	3 50
No. 3	10 x 12	"	3 75
No. 3½	12 x 10	" upright	4 25
No. 4	11 x 14	"	4 25
No. 5	14 x 17	"	7 00

Nos. 1, 2, 2½, 3, 3½ and 4 are handsomely finished in Morocco, half leather bound, with gilt title, and enclosed in a neat box. No. 5 is extra gold finish.

For sale by

THE SCOVILL & ADAMS COMPANY,

423 Broome Street, New York.

THE 5 x 7 HENRY CLAY
Stereoscopic Camera
FOR TRIPOD AND HAND USE.



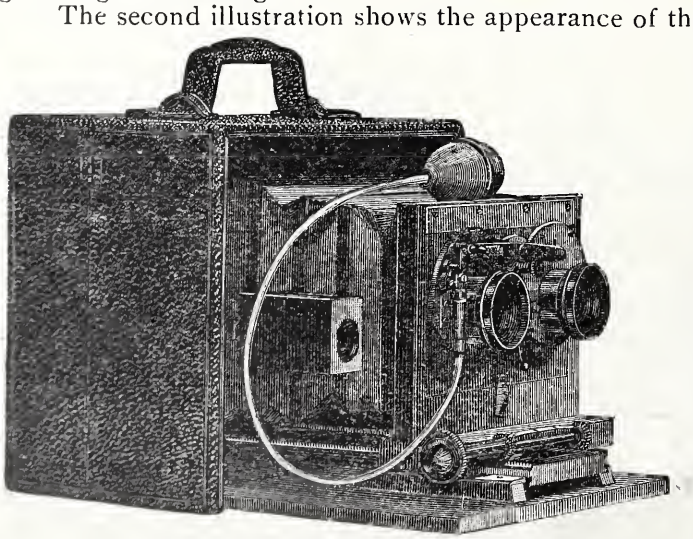
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

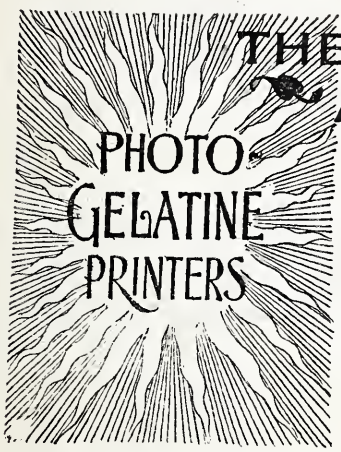
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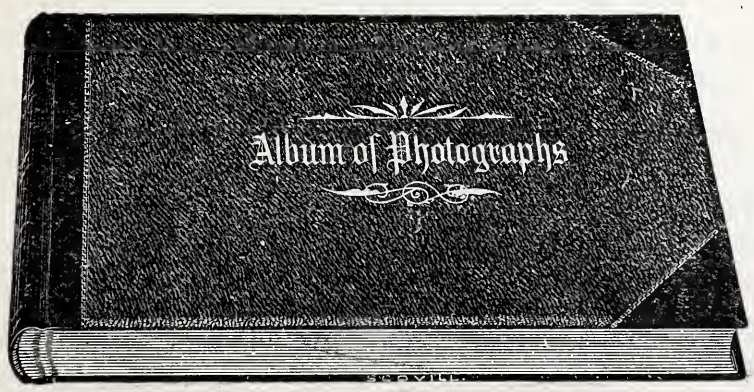
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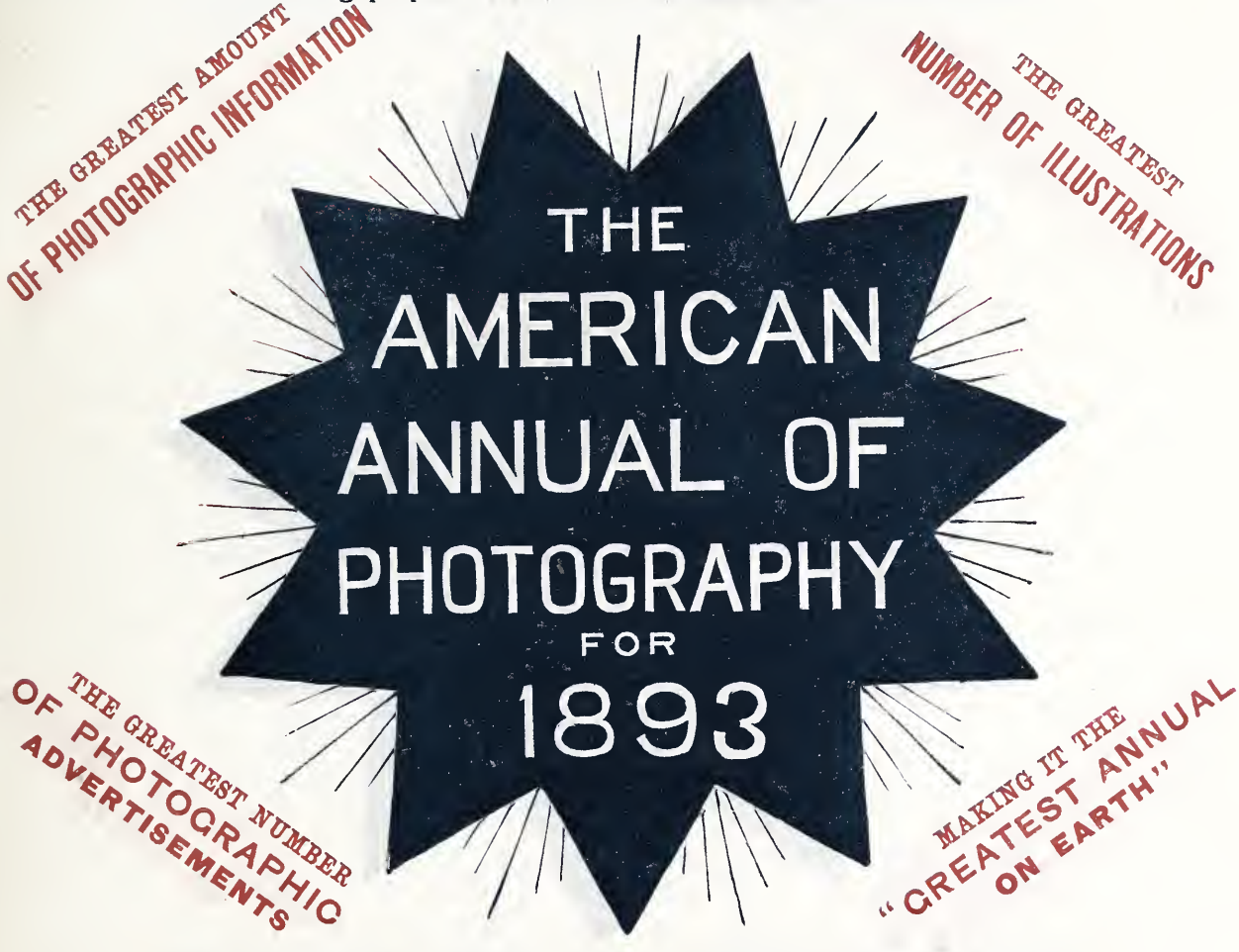
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GATEWAY—GARDEN OF THE GODS

(COLORADO)

THE PHOTOGRAPHIC TIMES.

VOL. XXII. SEPTEMBER 30, 1892. NO. 576.

GATEWAY OF THE GARDEN OF THE GODS, COLORADO.

OUR frontispiece this week is another picture by Mr. Allen, of the Alley-Allen Press, in his series of characteristic American Western scenes.

Most prominent among the curious formations in the Great West are the two razor-like walls rising upwards nearly 300 feet, which comprise the gateway to the Garden of the Gods. They are composed of brilliant red sandstone, and present a strong contrast to a similar though smaller wall of pure white limestone, which lies in the foreground.

Pike's Peak, which towers in the distance, forms a massive background to this formation, as viewed from the Mesa.

The reproduction was made by G. M. Allen & Co., now incorporated in the Alley-Allen Press.

EDITORIAL NOTES.

WHEN gallic acid is mixed with double its weight of aniline, the mass solidifies suddenly, and under rather high temperature. Continuous heating results in an uncertain combination of pyrogallol and aniline in long crystals, from which the aniline can be removed by washing with benzine or toluen, when pure pyrogallol remains. It melts at 132 deg. C., not at 115 deg. C., as has been stated erroneously.

MR. HENRY L. TOLMAN, the eminent photo-microscopist of Chicago, called upon us last week on his return from Europe, where he has been pursuing the study of his chosen science with the most eminent authorities on the other side. He states that America is far ahead of either Germany, England or France in the practical application of scientific results, though the German experimentalists have gone further in investigating and establishing theories. He met and worked with Victor Schumann, our esteemed correspondent, whom he says has given up his regular profession—that of a civil engineer—to pursue his photographic experiments.

In photo-mechanical work America is also ahead of the world, according to Mr. Tolman's observations. And he was good enough to say that "the pictures which are weekly presented in THE PHOTOGRAPHIC TIMES are admired in photographic circles all over the Continent of Europe as the best examples of their kind brought out in any periodical," and that he "found no photographic magazine in any part of the Old World with illustrations approaching in beauty of subject and perfection of reproduction those which are published every week in THE PHOTOGRAPHIC TIMES."

THE MAGNESIUM FLASH-LIGHT.—Mr. Londe has devised a very simple means to obtain a magnesium flash-light of great intensity without having recourse to any apparatus:

A sort of a capsule is made with 10 or 15 grains of gun-cotton and in the interior of it is spread 7 grains of magnesium powder, well dried and passed through a sieve, or, for very rapid exposures 15 grains of a mixture of 10 grains of dry magnesium and of 7½ grains each of chlorate and perchlorate of potassium (Dr. Eder's formula).* The capsule is then closed by joining the edges and, a clean copper wire being passed through it, it is suspended at the proper place. It now suffices to touch the cotton with anything in incandescence, held at the end of a long stick, to obtain a flash-light of great power.

If one possesses a Grenet's battery of a sufficient power (a 10-inch will do) the cotton can be inflamed instantaneously by the lightning flash.

* The mixture should be made at the moment of using it and should not be kept in stock for any length of time. It explodes spontaneously.

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The electric flash is not very calorific, and for this reason it is well to blacken the cotton with dry lamp-black or to rub it with finely-powdered resin.

The inflammation by electricity from a distance is certainly the most convenient and the least disturbing for the model. The reason is obvious.

YELLOW FOG.

THE cause of yellow fog is now well ascertained. It is a dyeing action which occurs with pyrogallol, hydroquinone and eikonogen by using old oxidized solution, or by long development, the reagent being then in state of oxidation. There are also other causes which influence the defect in question, but they are not known with certainty.

Sodium sulphite counteracts this phenomenon.

Washing in a solution of tartaric, citric, oxalic acid, etc., before fixing prevents the fog from occurring in the sodium thiosulphate (hyposulphite) solution.

Yellow fog can be removed before or after fixation. It can also be removed during the fixing process, by the use of the so-called acid bath, one compounded with acid sodium sulphite.

To remove it before fixing, prepare the following solution :

Sodium sulphite	1 ounce
Alum	1 ounce
Hydrochloric acid	160 minims
Water	8 ounces

In this the plate, developed and washed, is immersed for a period of three or four minutes, then fixed in a bath of sodium thiosulphate at 1 : 4.

To clear the negative after fixing is often a difficult operation. Of all the processes which were published, one of the best is that recommended by Mr. E. Garbe. According to the author it is based on the action of nascent sulphur dioxide generated by the influence of air and moisture on sodium thiosulphate. We think, however, that the decolorization is due to another cause, for the sodium salt, in the circumstances in question, is decomposed thus :

$$Na_2S_2O_3 + H_2O = Na_2SO_4 + H_2S.*$$

$$Na_2S_2O_3 + O_3 + H_2O = Na_2SO_4 + H_2SO_3.$$

Whatever it may be, here is the process of Mr. Garbe, described by himself in *Photo Gazette* :

We prepare the mixture following :

Glycerine and water, equal parts, in which is dissolved in the cold sodium hyposulphite to saturation (from 40 to 50 per cent).

This mixture is spread with a brush on the yellow negative, then the plate is set aside on a level surface, sheltered from the heat and dust. According to the intensity of the coloration, the yellow tint infallibly disappears in a more or less long period, which may vary from one to twenty-four hours. Here again, it is the *nascent* sulphurous acid which acts in consequence of the oxidation of the hyposulphite in contact with the air. This is so much more evident that the same negative is not discolored if immersed in a bath of hyposulphite, because the action of the air does not exist on the surface of the negative.

The means which we speak of has already been indicated, but with a solution of hyposulphite in water only, and it happened that from the evaporization of the water incrustations were formed on the surface of the gelatine film. The object of glycerine is to increase the proportion of hyposulphite dissolved, and to prevent the crystallization even after a very long period.

By this process we have decolored negatives which were so yellow that one could hardly see the image, and which were dry for more than two years.

A UNIVERSAL ALBUM.

THROUGH the courtesy of the editor of "The American Annual of Photography" I was enabled last year to propose the establishment of a Universal Exchange League. The idea was to arrange a Central Bureau, through the agency of which all who practise the photographic art could, if they so choose, exchange their pictures with others.

I am at once glad, and sorry, that this proposal has not resulted in the following up of my suggestion. In the first place, because I see that it wants a lot of working before the scheme can be universally understood and acted upon, and secondly, because I am convinced that it would give pleasure and interest to thousands, if it could have been carefully and conscientiously carried through.

The world-wide circulation that my proposal thus obtained soon brought heaps of letters from far apart places, all agreeing with me, that the scheme ought to be started, but most of them entertaining doubt whether it could be practically placed on a firm footing, without a deal of expense. I had many a kind promise of assistance from friends with my way of thinking, but notwithstanding this I soon found that this was hardly a sufficient lever to further agitate in the direction I had begun, and not being a capitalist I was unable to give myself the pleasure of giving same a start in

* This we give on the authority of Wurtz. If sulphurous acid is formed, then the action should be represented as thus :

an international centre as New York, London or Paris.

Thus it came about, that a private concern was established here under the name of International Photographic Exchange, and I am glad to say that I have reason to hope that it will in time be a success. If this should be so, I feel convinced that we have only the kindness of editors and others to thank for the kindly view they have taken of the matter, and the assistance they have gratuitously given us. A small fee has been charged, which may, or may not, in time cover expenses.

We now invite the world's amateurs in every land to partake in a very pleasing scheme, in which they will both receive and give pleasure. We are calling it the "Season Exchange," and the idea is to limit the membership to 100, which number will be divided between all countries who join, every one of these districts consequently having a small limited number alloted to it.

Every one of these 100 members are to take one picture of every season as they pass during 1893–4—*i.e.*, four negatives. Of each of these 100 copies will have to be printed and sent to us, in accordance with our rules, and in return every member will receive 100, or in all 400 different pictures illustrating the four seasonal changes in every country.

All members will thus in a year's time have a most valuable and interesting collection, without having had to go into great expense.

We propose making similar arrangements in other matters of daily life as soon as we see this through. We have thought that an international album of sports or of country life—in fact, on almost any subject, if it is universally taken up—would not only be of great interest, but also of much value.

Those who wish to join in the first series of "The Seasons" are requested to write for application forms, and say what size box they use, if favorite subject, landscape, *genre*, etc. As soon as the 100 entries are filed the membership will be closed, and in no case can this arrangement once made be broken.

Charles Hamfeldt.

EASY ENOUGH.

"Oh, how I'd like to be a distinguished woman!"

"Why?"

"Then I'd have my picture reproduced in the newspapers all over the land."

"Oh, just visit one of those advertising medical specialists and declare yourself cured of some disease, and your picture will appear as often as you desire!"

PICTORIAL SELECTION IN PHOTOGRAPHY.

(*Continued from page 487 and concluded.*)

Figures, Etc.

There are but few scenes in nature, however beautiful they may be, upon which the eye can rest with continued pleasure unless they exhibit some signs of animated life; consequently, few landscapes are complete without the introduction of figures or animals, which shall enlist our sympathies on behalf of the scene presented to us, and, moreover, furnish us with a scale by which we may judge of the extent of the view and the size of every other object it may contain.

Who does not know how greatly a wild stretch of mountain and moor is enhanced by the presence of deer, shaggy cattle, or horned sheep? and, supposing it to represent a spot even too dreary to afford sustenance for these, how welcome is the dark form of a cormorant rising with heavy beat from a peat-stained tarn, whose waters, chafed by the flapping wings, break into silver ripples along its course to the opposite shore! Or, to take a pastoral scene, who will deny the increased interest manifested in the contemplation of an old timber wagon with its team of horses and rustic attendants, whose demeanor, perhaps, suggesting some slight incident, no matter how trivial in itself, not only gives to the whole an air of reality and truthfulness, but lends an additional charm to the prospect presented.

Views which consist in a large measure of water, be it river, lake, or sea, find their proper embellishments in ships' barges and fishing craft of all conditions of shape and size, and of every possible description.

It is very essential in choosing an object or figure to remember it should be "in keeping" with the rest of the picture. Thus, in a village scene consisting of thatched cottages, with trees, a tiny brook, and distant country beyond, it would be highly injudicious to introduce an individual whose chief attributes consist of a stove-pipe hat, with coat and trousers of the latest West-end cut and design, to say nothing of "spats" upon his feet, and a stick and glass complete, very proper, no doubt, to his mind, for Piccadilly, but utterly unfit for the purpose we require. Rather let us look about for one whose clothes bespeak honest labor, which have long since lost the creases they once possessed in the shopman's windows, having, in part, become moulded to the form which lives beneath them.

Another point I should like you to consider is

the "pose" of your figures. It must be admitted that, in many cases, there is a lack of grace in country-side folk and a certain amount of crudeness, or angularity, call it what you like, about their natural attitudes. Perhaps no one better than a painter knows the great difficulty there is in overcoming this unfortunate effect, the most trying part of which is, that the more you endeavor to get your models into a pleasing attitude, the more rigid and angular they become. They have the knowledge they are being "took," and as they generally hold views diametrically opposed to those of the artist on such matters, a pleasing result is only obtained after much tribulation. This is, however, most to be remarked in persons of middle life and onward, as children of both sexes and those in the hey-day of youth generally pose themselves in very pleasing attitudes, quite befitting their country life and occupation.

Whilst it should be your aim to place your figures in such a manner as shall present agreeable lines in your composition, be *very careful* you avoid the other extreme in giving them a species of classic pose more suggestive of Junos or Dianas than the simple folk of a country village, remembering you had better a thousand times have angular and even somewhat ugly forms in your pictures than that such a result should obtain.

These remarks apply to rustic scenes and general landscape views, and, inasmuch as a West-end fop would be "out of keeping" in proximity to thatched roofs and whitewashed walls, so would a plowboy in a like degree be out of place in a London drawing-room, however much you might wish to emphasize contrast. Always see, then, that your figures are suited to the situation you intend them to occupy, and endeavor to place them in as natural and easy a posture as possible.

Now, as to where they should be introduced in your compositions. This will entirely depend on the subject you select, and what you determine shall be your strong point. If you decide that an object in the landscape shall first arrest attention, the figures will then have to hold a secondary position; but if there is nothing of any particular interest in your view, let the figures be made of more importance. They will generally be found useful as a "balance" in the composition, or as a "contrast," the irregularity of their outlines being opposed to the lines and angles of buildings, as also their apparel, to the darker tones of vegetation, or *vice versa*.

Another point you should consider is, whether you intend to make a "figure subject" or a "landscape with figures," as on this depends the size of the figures, or the space they should occupy. Avoid having them of such a size as would leave any doubt in the mind of the observer which was the more important part of the picture, the figures or the landscape. If the former, the prospect beyond should be broad and effective in its masses; if the latter, then the figures should be just sufficient to serve as a scale, and give additional interest to the whole.

In "grouping," care should be taken that no two groups are of the same size, nor placed in opposite positions. Always endeavor to have one group larger than any others, both as regards number and the space it occupies. Generally groups should diminish in the space they occupy as they recede from the eye. If the light admits, try and connect them by means of the shadows they cast; sometimes a dog will be found very useful to this end. In placing your models avoid formality, aiming rather at irregularity in their outlines. You do not want a regiment of soldiers; hence never arrange them in line, have some portion of the group higher at one point or another, not forgetting that nets or farming implements carried on the shoulder will materially assist you in this direction. If you have a preponderance of vertical lines in your composition, let the figures pose in such a way as shall cut them obliquely; should horizontal lines be in excess, connect them with those of perpendicular tendency.

The "relief" which figures afford in your pictures must receive some consideration; and, perhaps, in no instance will it be more necessary to remember what tones certain colors take when reduced to black and white. If this is overlooked, it will be found, after much care and trouble have been expended on their arrangement, you will get no effect, owing to the colors of the apparel worn by your figures being so near in tone to whatever may form their background.

If your background is light, you will have greater "breadth" if the tones of the dresses produce a light middle tint. If contrast is required, you will have recourse to pronounced tone; but, supposing you have a street view in some village, the brightest light being on the side of a house or wall, it is by no means necessary you should straightway select that spot as the most suitable to place your figures wearing the darkest clothes, unless you desire to rivet the attention of the observer on that particular point. It is impossible, in the infinite range of subjects which will commend themselves to your notice, to say where your figures should be placed in every instance. If you have natural taste, positions will be suggested almost at a glance, and it

will only remain for you to bear in mind some of the precepts which have been enumerated in order to determine which is the most suitable, in keeping with the laws of composition.

Those who do not possess this precious gift, but who are anxious to produce pictures having some claim to artistic merit, I can only advise they should endeavor to master these rules—a by no means insuperable task—at the same time taking note of good work executed by others, not only in photography, but in every branch of pictorial art, and, above all things, continually going to Nature, closely studying her under her many aspects, thereby acquiring a knowledge which can never fail to interest, and which will always elevate and refine.

Let me say, in conclusion, I hope these remarks on composition may assist you in your future efforts with the camera; and, although at first sight it may appear a difficult matter to overcome, it should be remembered, so vast is the importance of its principles to the artist, that any time spent upon their acquisition will be well bestowed. Of this, however, we may all rest assured, that no portion of sound knowledge is ever gained without some corresponding amount of exertion, and equally certain is it that "excellence is never granted to man but as a reward of labor."

The following works have been referred to in the foregoing remarks: "Theory and Practice of Landscape Painting," by George Barnard; "Theory of Painting," by T. H. Fielding; "Model Drawing and Perspective," by Williams.

W. D. G.

AN AMATEUR'S VISIT TO THE BERMUDAS.

The Bermuda Islands, a group of coral formation, about seven hundred miles southeast of New York, are full of picturesque beauty to the artist, and of corresponding attractiveness to the amateur photographer. I spent twenty-five days of last February upon these islands, and among the many pleasant recollections I cherish of my visit are the charms of camera and tripod practice. I was accompanied by my son Percy, twelve years of age, and we jointly exposed over two hundred photographic plates during our stay, a large majority of which have developed into at least tolerable pictures. A few suggestions growing out of our experiences and observations may be of interest to some other amateurs.

The Bermudas present tropical phases of nature that to a resident in the more northern parts of the United States partake of new aspects. There is not just the same sky, but one of a softer tint; the very stars seem to shine with a milder and more perfect radiance, without the sparkling twinkle of the northern latitudes; and the foilage of a luxuriant continuity and darker evergreen hue is in more solid masses by itself and greater sombreness. The lighting of the landscape is largely by the dazzling white of the coral houses and the deep cuts of the roads through the solid rock. To this is to be added the crystalline waters, reflecting the different depths and the many colors of the coral bottoms on the surface of which the sun plays with ever-changing chameleon effects. I was peculiarly impressed with the way in which land and water and sky seem to mingle and melt into one another in the distance. There is a beauty in this blending such as I have seldom witnessed elsewhere. It is a subtle charm that is alike elusive in description and reproduction. Some of these finer features can be suggested by camera effects, but they are necessarily largely lost when the attempt is made to photograph them.

Hardly more than twenty-five square miles are needed to cover the entire area of the 365 islands said to be numbered in this group—one island for each day in the year. The perfection of the Bermuda roads makes nearly all methods of locomotion, such as walking, driving, and bicycling, popular. Riders of the wheel will find bicycling eminently satisfactory for careful observation. We early discovered that a day's outing was usually productive of the most satisfactory results by hiring a donkey and cart to be accompanied by a pickaninny driver—all secured for a few shillings. Cameras and lunches can be packed in the cart, and the pickaninny is able to urge the donkey along after your wheel at a brisk trot. Woe be to you if you try driving a donkey yourself with the hope of doing anything else! The race would be won by the historic snail without the aid of fable. Whenever the peculiarities of the landscape or combinations of land and sky and water present a picture that it is desirable to perpetuate, a halt is called and the donkey and cart speedily arrive with the apparatus.

Nature does not present many rugged features on these islands. About what is called Tuckertown the natural arch and a bold headland are quite impressive on account of their massiveness. Bewitching combinations of islets, reaches of tinted water, and glimpses of blue sky are sources of frequent surprises, and I may also add of disappointments in trying to transfer the sentiment aroused with the picture to the photographer's plate. The

amateur will scarcely fail to visit Fairy Land, Moore's Vale, Gibbs' Hill, and the North Shore. If he has the time and the opportunity he ought to spend a day at Wreck Hill, and also to view St. George's and its crowning forts from the light-house on Saint David's Island. The photographer has to contend with unexpected showers, and frequently with rather strong winds. The latter, however, are often productive of specially fine effects along the more more picturesque shores.

In my own experience I found it better not to attempt much in the way of having plates developed on the islands. The local photographers are exceedingly accommodating, but their hands are so full of that kind of work that they cannot give the care and attention that is needed to get the best results in all cases. I recommend the development of a few plates to test the time of exposure, and then to carefully pack the remainder un il the return to the States. With many amateurs at the Bermudas the tendency is to make the time of exposure too short. So much has been said about over-timing in tropical countries that the mistake is apt to be made of not giving time enough. My experience was that the time for an exposure in February in the Bermudas should generally be about the same as at Chautauqua during the month of August.

I found the proper lighting of tropical foliage for a good photograph is usually quite different from that in Northern climates. I have referred to its luxuriance and continuity. These give it density, so that the illumination is usually one-sided, with very heavy shadows, in the morning and evening. In the middle of the day, with the strongest illumination from above, the light is more evenly distributed throughout the mass, and the best pictures can then be obtained. A striking example of this may be seen in the variety of views taken of Cedar Avenue, at Hamilton. This beautiful street is of white coral bottom lined on both sides by stately cedars of heavy foliage. When a photograph is taken in the early part of the day, or well along in the afternoon, the shadows are so dark that the trees seem to meet overhead in an impenetrable thicket, and the view is lessened and the perspective shortened. But with the picture taken about noon, or with the sun well up from the horizon, in a good light, the illumination from the top penetrates the entire mass, and the cedars tower in majestic proportions, with the avenue cutting a clear path through them.

A final word of advice to amateurs visiting the Bermudas—advice that is good in a general way—is to have your photographic apparatus well tested and in perfect repair before leaving the States, and to bring a liberal supply of material with you. Where steamers land but once a week on regular trips it is trying to the patience to send elsewhere for anything lacking, and the chances of having your wants filled locally in the photographic line are precarious.

A. M. Martin.

DARK-ROOM WORK.

NEARLY all beginners in photography, either professional or amateur, enjoy the work of the dark-room. There is fascination in developing pictures. How eagerly one who is interested will pour on the developer and watch for the image to appear. First the high lights (if the plate has been exposed properly), then middle tones, and lastly deep shadows show detail. Then careful watching to build the plate up to just the right printing density.

What marvellous drawing! What intricate detail, and so quickly done! No wonder it is fascinating; and yet to the professional photographer, who is in the dark-room hours at a time, it sometimes becomes monotonous, and it is desirable to simplify the work as much as possible and get through with it the quicker.

The writer is in favor of a rather commodious room lighted by artificial light, for the reason that it is much more uniform than daylight and is equally available at night. An ordinary kerosene lamp answers the purpose very well, if it can be in another room, immediately adjoining and behind a window covered with ruby paper; thus heat and fumes of the burning oil are avoided.

The advantage in developing at night is considerable in hot weather, as the rooms are usually cooler than during the day. No doubt many plates have been blamed for fogging which would have been perfectly clear if developed at a lower temperature.

Most of the plates made nowadays are very sensitive to light, and care must be taken to keep them away from any light whatever as much as possible. Very little is required for putting plates into the holders; just a narrow line of non-actinic light on the opposite side of the dark-room is sufficient to reflect on the back of the plate.

There are so many developers for dry-plates that sometimes one is unable to choose—but they vary somewhat in action and should be selected according to the kind of work to be done—a skilful photographer should be able to use all the different kinds with success. Eikonogen and hydroquinone

are rather more energetic than pyro, but any developer has greater energy when freshly mixed.

The writer strongly favors pyro for general work —to be dissolved immediately before use.

Printing quality is what we want rather than pretty negatives. Some workers try to get a wet-plate effect—considerable clear glass in the shadows—but somehow the prints from such negatives are not like those from collodion films, they are usually lacking in vigor. Again, one may make negatives with beautiful detail in the shadows but the contrasts so strong that it is lost before the high lights are sufficiently printed. Then the color of the film has a great deal to do with the result, and this must be regulated in the dark-room.

If negatives appear too dense after fixing it is well to reduce them at once, before washing, with red prussiate of potash and hypo. If too thin they should be washed thoroughly and then intensified.

After all that has been written in regard to latitude in time of exposure (to be corrected by modifying the developer) one is likely to finally conclude that the best way is to expose just right and develop with a normal developer. It is indeed a difficult, in fact an impossible thing, to always expose correctly, but often it would be less expense to use two or more plates on the same subject than to depend on one. For instance, if you are taking a view which you think requires three seconds' exposure, give one plate two and another four or five seconds, and you are pretty sure to be right with one of them. And with exposure right, dark-room work becomes a comparatively simple matter.

E. B. Luce.

DISTORTION OF OUTLINE IN PHOTOGRAPHY.

[A Paper read before the Photographic Society of Great Britain.]

We pride ourselves upon the truthfulness of photographic representation, and, I think, quite justly. But it must be admitted that skill and care are necessary in order to realize the truthfulness that our art is capable of. Certainly the great number of photographic falsities, if not all of them, are subject to rule, and can therefore often be detected, and their possible limits stated, by those who have studied the matter. But we cannot hope ever to see the possibilities of falseness eliminated.

The dictionary says that to *distort* is to twist a different way, or to force out of the regular shape, and, by way of illustration, I would refer to the distortion of one's face, or the twisting awry of an India-rubber doll. There is no doubt whatever of the meaning of the word in such cases; but when we come to talk of the distortion of a representation, we enter upon less sure ground. There may be, and I think I may say that there are, differences of opinion as to what is truth in the pictorial representation of solid objects, and it is obvious that if we are not agreed as to what truth is, we cannot determine to mutual satisfaction where distortion begins. I propose to use the word distortion in its common every-day sense without attempting a definition of it.

And I would go further and suggest that we may have distortion that is not inherent in the picture, because it can be got rid of without touching the picture. An awkward point of view may cause such distortion, and I submit that it would be pedantic to argue that distortion was absent in an exaggerated case of this sort. Thus we do not of necessity keep clear of distortion in adhering rigidly to the rules of plain perspective, and there is no exact line of demarcation between truth and untruth in this matter.

I think that unless we attach a new meaning to the word *distortion* we must admit that it will always remain a matter of opinion as to exactly how far we may go without getting beyond the bounds of truth. This point will be illustrated subsequently; but it may be remarked here that there are many other cases in which right and wrong insensibly merge into each other. We cannot define the boundary between lawful eating and gluttony, or between a noble and an ignoble pride.

Distortion of outline in photography must be due either to the lens, the sensitive surface, or to the medium (the air) between the object and the sensitive surface. This last cause I propose to pass by altogether, as its effects are visible when looking at the object, and it is not of photographic origin. There remains, therefore, the lens and the plate, and each of these may produce distortion, because of its inherent properties, and also because of its position.

Distortion Due to the Lens.—This is called "curvilinear" distortion, and its varieties are stated to be "barrel-shaped" distortion, or "pin-cushion," or "hour-glass" distortion, according to whether the diaphragm is in front of or behind the lens. The names "curvilinear," "barrel-shaped," and "pin-cushion" (or "hour-glass") I have no fault to find with, because they indicate a marked and fairly distinctive feature in each case, and names very rarely do more than this. But I must take the very gravest exception to the general method

of representing this distortion, because it does not in any way refer to the principle of the distortion; it represents one effect only, and this in a deceptive manner.

When a pencil of light passes through a plate of glass with parallel sides it will suffer no displacement if the surfaces of the glass are at right angles with the path of the pencil. If the glass is in any other position, the pencil will be shifted laterally; but the path of the emergent pencil will be parallel to the path of the incident pencil, and there will be no angular displacement. But if the glass has surfaces that are not parallel to each other, there is an angular displacement of the pencil of light, and it is bent always toward the thicker part of the glass. For the same glass the deviation is greater as the angle formed by the surfaces of the glass increases. Now, a positive or image-forming lens is thickest at its centre, and its surfaces are inclined at a constantly increasing angle towards its edges; therefore, a pencil of light that passes through any part of it except its centre will be bent inwards toward the middle of the lens, and the deviation will be greater as the pencil approaches the edge of the lens. This is the cause of curvilinear distortion, and the effect is that the details of the image, except those in the centre of the plate, are displaced either toward or away from its centre, according to whether the diaphragm is in front of or behind the lens. There will be a certain area in the middle of the field, where the image is formed by the central part of the lens, in which there will be practically no displacement. Curvilinear distortion can be most simply represented by its effect upon a series of concentric and equidistant circles. In barrel-shaped distortion the outer circles are displaced inwards, and in hour-glass distortion they are displaced outward.

(*To be continued.*)

A NEW DEVELOPER FOR QUICK-PRINTING PAPERS.

THE zeal with which in Germany science and industry are working to discover, manufacture, and introduce new developers has again resulted in the production of a chemical agent possessing most excellent qualities.

The certificate of the Photographic Institute in Vienna, published in the June number of the *Photographische Correspondenz*, contains sufficient information as to the discoverer, origin, chemical ingredients, and qualities of this new developing substance called metol. But it gives no information as to its use with developing papers, which induced me to make some experiments in that direction with metol. The development of a positive on paper has to be regarded from a totally different point of view from that of the negative. Here the reduced silver image has to be considered only in regard to the reflected light, there in regard to the transmitted light, not forgetting that in the positive picture clearness and the tone of the reduced silver image play a far more important part. Metol can very well be used with developing papers both for silver bromide and silver chloride. It produces a very quiet, regular, and exceedingly clear development and good tones, being free from unpleasant qualities.

In a simple mixture with sulphite of soda, therefore, without any addition of alkali, metol shows developing power both for silver bromide and for silver chloride, but in neither case is the result fully satisfactory, except in developing red and brown pictures on chloride of silver. I have obtained very tolerable results with the following formulas, I. and II. I must remark, by way of preface, that the proportions given by Dr. Eder have been taken as a foundation:

SOLUTION A.

Distilled water	1000 grammes.
Neutral sulphite of soda	100 grammes.
Metol	10 grammes.

SOLUTION B.

Distilled water	1000 grammes.
Potash or soda	200 grammes.

I can recommend the following proportions for chloride of silver development by means of metol sulphite with alkali:

FORMULA I, FOR SEPIA TONES.

Metol-sulphite (Solution A)	50 cm.
Bromide of potassium (1÷10) 1 cm	16 drops

Exposure, four seconds of diffused daylight, 1 metre from the window.

FORMULA II., FOR RED TONES.

Metol-sulphite (Solution A)	25 cm.
Distilled water	75 cm.
Bromide of potassium	6 drops

The exposure was 5-6 seconds of diffused daylight, close to the window.

But the addition of carbonic alkalis gives the metol developer far greater power of developing. As little as 1 cm. solution of soda (1 ÷ 10), added to developer II., produces deeper color-tones and quicker development; with 4 cm. addition of soda a considerable dilution is necessary in order to stop at the desired red-brown tone.

The dilution with metol-sulphite without alkali was four-fold for red tones; here we must make it twenty-fold, which shows the considerable increase of power given to metol by soda or potosh.

FORMULA III., FOR SEPIA TONES ON CHLORIDE OF SILVER.

Metol-sulphite (Solution A	6 cm.
Potash (Solution I.)	1 cm.
Distilled water	84 cm.
Bromide of potassium	10 drops

Exposure, 4 seconds of diffused daylight, 1 metre from the window.

FORMULA IV., FOR RED TONES ON CHLORIDE OF SILVER.

Metol-sulphite (Solution A.)	6 cm.
Soda or potash (solution)	1 cm.
Distilled water	140 cm.
Bromide of potassium	7 drops

Exposure, 5-6 seconds of diffused daylight, close to the window.

The metol developer works much more clearly after being used a few times. As it may be diluted with water at pleasure, old negative metol developers can very well be used for positive development. A considerable addition of bromide proved detrimental to the tone for reduction on chloride of silver, for in this case, if the tone is to be pure black, the exposure must be shortened. On the other hand, a small addition of bromide is necessary to be sure of perfect clearness. In this case the following formula proved serviceable:

FORMULA V.

Metol-sulphite (Solution A)....	.....60 cm.
Potash (Solution B).....	.....10 cm.
Bromide of potassium (1—10).....	4-8 drops

Exposure, half a second of weak diffused daylight (as before).

This is the same powerful developer used for bromide of silver development.

The proportions given by Dr. Eder for negative development with metol will in general hold good for positive development on bromide of silver emulsion paper. With dilution it is not possible to obtain such a deep black. On the other hand, an addition of bromide of potassium is to be recommended:

FORMULA VII.

Metol sulphite (Solution A).....	...50 cm.
Potash (Solution B).....	.....10 cm.
Bromide of potassium (1—10).....	.....10-16 drops

The image appears with about the same strength and depth as with fresh oxalate.

An increased addition of carbonic alkali, or even caustic potash could not materially reduce this depth of reduction. But an addition of yellow prussiate of potash (after Himly's and Lainer's plan) proved very advantageous, as one obtained with it pictures of as deep black a tone as with rodinal, and almost as deep as with Lainer's rapid hydroquinone.

Here is the formula used by me:

FORMULA VIII.

Metol-sulphite (Solution A.)	60 cm.
Potash (Solution B.).....	20 cm.
Yellow prussiate of potash.....	5 grammes.
Bromide of potassium (1 — 10).....	12 drops

Exposure, about one-third of the time wanted for oxalate. The development proceeds very quickly. A rapid metol developer thus prepared has the great advantage over rodinal and over rapid hydroquinone that one can work quietly and surely with it, as one need not fear any softening or peeling of the coating; one need not be so careful about a cool, dark room and cold baths, but can work with it at the hottest time without scruple.

An addition of hypo-sulphite of soda has a similar effect on the metol developer, though in a less degree—12 to 16 drops of the solution (1 ÷ 100) to 100 cm. metol developer accelerate and produce deeper shades. No unpleasant secondary effect—*e.g.*, veiling the lights—was observed.

Dr. E. A. Just, in Photo. News.

Correspondence.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: In relation to the question of L. D. B. in your last number, I wish to testify to a similar experience three years ago. I developed several negatives on a very warm evening, and before fixing I flowed over the first one a strong solution of chrome alum. As I replaced the bottle on the shelf I held the plate under the tap to rinse, and was surprised to find the bottles on the shelf suddenly become visible by light coming up from the tank. Looking down I found the water glancing from the plate in a luminous shower. The second plate treated in the same way produced the same result. I became greatly interested in the matter at the time, and tried a number of experiments but could never get the same effect again. My idea was that the light was of a *phosphorescent* origin, and I remember of reading some authority, that I can not now recall, as saying that under certain circumstances alum becomes phosphorescent. The two elements of warm alum solution and cold water were present in both the case of L. D. B., and my own, and it would seem that they are necessary to produce the phenomenon.

Any scientific explanation of the matter would be of great interest to me as well as to L. D. B., and others whom I have no doubt have seen the same thing.

Yours,

J. Wm. Barbour.

CHAMBERSBURG, PA., Sept. 20, 1892.

SHE SENT IT.

DEAR MISS WRITER:

Please send for our next number and article that will admit of being nicely illustrated.

Yours,

THE EDITOR.

DEAR SIR:

Enclosed you will find the latest and best photograph of myself. Yours,

MISS WRITER.

BRITISH PHOTOGRAPHERS AT THE COLUMBIAN FAIR.

[Extracted from *The Practical Photographer*, Sept. 1, 1892.]

READ what we said about the proposed photographic trip in our last issue, p. 191. It is intended that the Chicago Exposition in the World's Congress shall open on May 1st, and remain open till October 30, 1893. It will be the greatest practical demonstration that the world has yet seen of how near we can approach to the ideal of human brotherhood.

Her Majesty the Queen has issued a special Commission empowering the Society of Arts to act as Special Commissioners to the Exhibition. The British Government has voted £60,000 towards the expense of adequately representing the industry and arts of Great Britain. The Secretary of the Commission is Sir H. Trueman Wood, M.A., John Street, Adelphi, W.C.

Special attention is being given to photography by the

British Commission. The photographic committee consists of B. Francis Cobb, The Attorney General, M.P.; Sir Frederick Bramwell, Bart., D.C.L., F.R.S.; Capt. W. de W. Abney, C.B., F.R.S.; Geo. Davison, James Dredge, Col. Joseph Gale, and H. P. Robinson

The following particulars of the Department of Photography are extracted from the official *Handbook*.

"All the photographic exhibits, including photographs, process prints, and apparatus, from this country will be placed together in the portion of the Liberal Arts and Manufacturers Building allotted to the British section.

"As wall space is not available, screens will be fitted up for the exhibition of photographs, photogravures, and other pictures produced by photographic methods, but exhibitors desiring to erect their own screens or stands can do so.

"A collection of photographs, illustrating the best work of amateur and professional photographers in the United Kingdom, will be arranged by the Royal Commission. The pictures lent for this purpose will be transmitted to Chicago and brought back thence free of charge to the exhibitors, and the Royal Commission will also undertake their care while they are in the Exhibition.

"Invitations will be sent to a limited number of photographic artists, and it is hoped to be able to get together a collection which will be worthy of the present advanced condition of photographic art in England. *Pictures will only be received from those to whom invitations have been addressed.* In addition to this selected collection photographs may be sent by exhibitors at their own cost, and for these space will be allotted in the usual way."

We may supplement this by saying that there is no charge made for space, and that those who wish to exhibit photographs in addition to the selected collection, must, of course, make application, and secure allotment of space in good time.

We have to thank every one of our English contemporaries for the prominence they have given to the project. The letters from the States and from Canada are most encouraging, promising our party every assistance and a hearty welcome. Several of the American magazines and even some of the daily papers have taken up the matter splendidly, and we thank them in the names of all.

The Hon. Chas. C. Bonney, President of the World's Congress Auxiliary of the Exposition, answering our letter, advises us that the World's Congress Committee on Photographic Art will advise us as to what arrangements can be made for a truly international congress of photographers, and says, on his own responsibility:

"You may be sure that the party of English photographers to which you refer, will receive a hearty welcome from the leading committee of the Congress, as well as from their American brethren generally."

The Secretary of the Chicago Camera Club, whose letter we quote because his society is the one on the spot, and his letter was the first secretary's letter received, tells us that the rooms of his club will be open to visitors, who will be very welcome; and that the club intends to get out circulars of useful information, including addresses of those who have dark-rooms for public use. He concludes by "wishing you all success in your undertaking, and assuring English camerists a hearty welcome in Chicago."

Our list of those who intend to visit Chicago—unforeseen circumstances excepted—is steadily growing. The first Colonial adherent has come in—Mr. D. H. Davies, of Johannesburg. We have a tentative promise from an amateur in Durban; and our English list includes the honored name of Mr. F. York.

And now a word as to what we do, and *do not*, intend. Our use for the word "party" has proved misleading, for we do not wish to arrange for the whole of the members to travel by the same steamer, stay the same length of time, and see the same sights. We hope that there will be a number of small parties, but the whole arrangement would be better described as a federation than as a party. We propose that the excursion shall have a definite name, yet to be decided. That members shall have distinguishing tickets entitling them to such privileges as we are able to obtain; and that a programme and book of useful information for photographic visitors shall be issued for their use.

The programme will cover the whole time the exhibition is open, and include:

1. Dates and subjects of meetings of such societies as offer their hospitality to our visitors individually.

2. Addresses and particulars of societies whose dark-rooms, libraries, etc., are placed at the service of our individual members.

3. Brief itineraries of the principal cities, with hints as to the objects of interest to be photographed, etc., etc.

5. A directory of photographers and others in the various cities who will be prepared to give information and assistance to our visitors.

5. Full particulars of the World's Congress on Photography, which will be held during August, and of the Convention of the Photographers' Association of America (July 18th to 21st), which it is hoped that a large number of the Old World visitors will be able to attend. Etc., etc.

An erroneous notion has got abroad to the effect that visitors entering the United States next year will have to pay duty on their cameras, lenses, etc. We wrote to the Consul-General of the United States on the subject, and he replies as follows:

"H. SNOWDEN WARD, ESQ.,
"Editor *Practical Photographer.*

"SIR—In reply to your letter of the 17th inst., I beg to say that cameras in use taken over by passengers are admitted free as personal effects.

"Your obedient servant,
"JNO. C. NEW, Consul-General."

Those who join our party can obtain all necessary information on such points as the above, and will have many of the difficulties somewhat smoothed.

In conclusion. We again ask all who even *may* be able to visit the Exposition to write us at *once*. It will cost them nothing, and every name added to the list will help us in arranging special facilities for the convenience of all.

PROOF POSITIVE.

"You say you can prove that he runs away from his debts?"

"Yes. I presented my bill to him not long ago, and he turned his back on me and went off at a terrible pace. I just snapped my Waterbury on him and caught him in the act!"

Notes and News.

Cummins & Menzes, photographers, of Corsicana, Texas, have been burned out.

Harry C. Hall, of Augusta, Georgia, was burned out to the extent of $5,000, $3,000 of which was covered by insurance.

Brookshire & Matthews, photographers of Meridian, Miss., have been succeeded by Brookshire, Matthews & Co.

O. H. Peck, the enterprising photographic merchant of Minneapolis, has been in New York this week. He reports business as good in the Great Northwest.

Photographer F. W. Guerin's friends have just learned that by an act of heroism he saved a young woman's life. At Martha's Vineyard, during unusually rough weather, the young bather got beyond her depth and became so exhausted that she could not even call for help. Mr. Guerin swam to her assistance and dragged her ashore.

A Talking Clock.—A "talking clock" has been invented by a watchmaker in that busy centre of horological art—the city of Geneva. According to a description in *Photographic Work*, its conversational powers are due to an interchangeable system of phonographic discs, so that it cannot only be used as an alarm to call up sleepy servants, but actually bid them "get out of bed" in the employer's own voice. It is observed that the talking can be adapted to various occupations. The photographic printer's clock could be fitted to announce when the prints are to come out of the hypo bath, and also refresh the memory of the printer as to turning over the prints from time to time, and as to the required number of washings.

We are informed by a writer in *Tit-Bits* that French photographers possess a happy knack of relieving their sitters of that constrained and distressed look which is too often a characteristic of the pictures taken in other countries. We are further informed that this knack has long been a matter of perplexity and envy to the photographers of other nations, so much so that recently a West End photographer took the opportunity, while on a visit to Paris, to discover the secret of this successful casting out of the spirit of self consciousness.

Here is the solution of the problem. The brutal Saxon says: "Now, ma'am, look pleasant," while the polite Frenchman says: "It is quite unnecessary to ask madame to look pleasant; she could not look otherwise." A beam of contentment and gratification naturally passes, like a summer breeze, over the features of the sitter, and while the beautified expression thus brought about is at its height, "click" goes the shutter, and the portrait is taken.

By the way, has any photographer ever been known to ask a sitter to "look pleasant"? We believe not. The phrase owes its origin to a picture by Du Maurier, which appeared in *Punch* some years ago, and the original fun was in the contrast between a Cockney operator and a very aristocratic-looking young damsel. Said he: "Now, miss, look pleasant; think of 'im."—*Photo. News.*

The Editorial Table.

Praktisches Taschenbuch der Photographie. Von Dr. E. Vogel. Zweite vermehrte and verbesserte, Auflage, Berlin: Publisher, Robert Oppenheim.

This little pocket manual, scarcely a year old, has been issued in another editon.

Fotografisk Tidskrifts Arsbok for 1892. Albin Rosval, Editor. Tidskrift Forlag., Stockholm.

The "Swedish Annual," published quite late in the year, deserves the attention of the photographic public on account of its neat appearance, instructive reading matter and splendid illustrations. The winter landscape after Adelskold is a perfect masterpiece of the Lichtdruck process, Obernetter's and Paulussen's photo copper-plate engravings sustain the reputation of the makers and an excellent cloud picture on matt-surface paper is not less one of the interesting features of this little year-book in the Swedish language.

Handbuch der Photographie. Third Volume. Die Anwendung der Photographie, by Major Giuseppi Pizzighelli. Halle. a/S., Wilhelm Knapp.

The third volume of this excellent work must, like its preceding parts, be placed in the foremost rank of photographic publications. The learned author devotes much of his time and space to the describing of how most successfully to photograph in the many provinces of science as well as those of the tourist or amateur. Besides landscape, marine, or still life, by instantaneous and timed exposure, much information is given in photomicrography, photogrammetry; celestial photography, ethnology, anthropology, the medical science receives much of the author's attention. Pizzighelli's great work, highly instructive and interesting to all photographers should find its place in all libraries and be adopted as a book of reference by all photographic associations.

From Mr. H. English, a member of the Toronto Amateur Club, we have received an exceedingly fine 6½ x 8½, representing a scene of the Annual Races of the Toronto Bicycle Club. The picture taken in the 200th part of a second shows in every part perfectly sharp, or at least as far as the capacity of the stop permitted. Details very fine, the clouded sky spendidly reproduced.

Another of the same size, "The Irosin Ravine and Bridge," is not as good. Taken with a wide-angle lens, the immediate foreground is somewhat exaggerated, and had our good friend employed a quick color-sensitive plate, the effects in foliage and water would be less chalky.

From Mr. L. C. Schwertfeger, of Lincoln, Ill., comes a 5 x 7, of donkey, cart, and two mischievous little urchins, taken instantaneously. It is a splendid specimen of photographic work.

The print on collodion aristo paper is not toned enough to make it attractive, which is a great pity when considering the excellent quality of the negative.

N. C. Thayer, the veteran photographic merchant of Chicago, issues a catalogue of background sample from his present headquarters at 263 Wabash Avenue, which is

worthy the attention of all professional photographers. We presume the catalogue will be sent to any one on sending an application with a stamp.

Record of Photographic Patents.

478,663. Photographic Printing Machine. John Uric, Jr., Jersey City, N. J.

478,780. Photographic Camera. William H. Bristol, Hoboken, N. J.

478,837. Photographic Camera. Hiram A. Benedict, New York, N. Y.

478,909. Camera Shutter. Thomas H. Blair and Fred. H. Kelley, Boston, Mass.

479,186. Photographic Holder. James H. Hare, Brooklyn, N. Y.

479,305. Manufacture of Photographic Films. Henry M. Reichenbach, Rochester, N. Y.

479,587. Magazine Camera. Stephen C. Fay and Henry Willis, Rochester, N. Y.

479,664. Tray. Max S. Rosenzweig, New York, N. Y.

479,667. Photographic Album. Gustave Schwab, New York, N. Y.

480,808. Camera Attachment. Edmund De Moulin, Greenville, Ill.

480,822. Folding Support for Head-rests and the like. Thomas Mayes, Albany, N. Y.

480,995. Camera Shutter, William H. Bristol, Hoboken, N. J.

481,343. Camera Shutter. William H. Bristol, Hoboken, N. Y.

481,802. Plate Attachment for Cameras. George L. Minear, Ottumwa, Ia.

482,002. Photographic Background Holder. Alvin C. Caswell, Fitchburg, Mass.

482,854. Photographic Shutter. John E. Thornton, Manchester, England.

482,978. Support for Photographs, Pictures and analagous articles. Andrew Hunter, Chicago, Ill.

TRADE MARKS.

21,430. Photographic Paper. E. Liesegang.

21,572. Photographic Paper, Plates and Chemicals. A. Schwarz.

21,596. Photographic Dry Plates. L. H. Baekeland.

MY PHOTOGRAPH.

BY JOHN B. TABB.

My sister Sunshine smiled on me,
And of my visage wrought a shade.
"Behold," she cried, "the mystery
Of which thou art afraid!

"For Death is but a tenderness,
A shadow, that unclouded Love
Hath fashioned in its own excess
Of radiances from above."

—*Harpers' Magazine.*

ONE WAY.

"I think you were here before, Miss."

"Yes, but it is fully three years since you took my last photographs. How could you remember me through so long a time, I wonder?"

"Oh, I remember that yours was the prettiest face I photographed that year."

"I want a new photograph, and I'll take six dozen, please."

Queries and Answers.

346 A. S. P.—What is the cause of these two spots (negative shown)? They were not there when the plate was set up on the rack to dry. How can I take them out?

346 *Answer.*—Two drops of water were spilled upon the film when but partly dry. There is no possible way to remove these spots by chemical means. Careful negative and positive retouching is your only remedy.

347 MISS P. Y.—How can I remove the yellow stain from negatives developed for a very long time with hydrochinon?

347 *Answer.*—This question has been answered before. Use the clearing solution No. 53, page 263 of "The American Annual of Photography" for 1892, or still better No. 62, on page 265 of the same book, but remember No. 62 also reduces the density of the negative, and should be used therefore in a very dilute state and with much caution.

348 C. W. C.—Will you please inform me what is the difference between *meta*-bisulphite of potash and bisulphite of potash (acid sulphite), and can one be used for the other by the addition of a little C. P. sulphuric acid?

348 *Answer.*—Acid potassium sulphite $KHSO_3$ is produced when a solution of normal potassium sulphite $K_2SO_3 + 2H_2O$ is saturated with sulphur dioxide SO_2. This solution is the acid bisulphite of potassium (or sodium, as the case may be) we employ for preparing the acid fixing bath. Alcohol precipitates from it small crystals in acicular form not very easily soluble in water, and known as meta-bisulphite of potassium. The action of sulphuric acid upon normal sulphite of potassium may be expressed by the following equation:

$$\underset{\text{Potassium sulphite}}{2K_2SO_3} + \underset{\text{Sulphuric acid}}{H_2SO_4} = \underset{\text{Potassium sulphate}}{(K_2SO_3} + \underset{\text{Sulphur dioxide}}{SO_2}) + \underset{\text{Potassium sulphate}}{(SO_2 + K_2SO_4)} + \underset{\text{Water.}}{H_2O}$$

(*and* *and* *produce* *and* *and*)

349 MAUDE S. A. has read of "negatives being sufficiently clear to admit of being intensified with mercury." Can not all negatives be intensified advantageously?

349 *Answer.*—When a foggy negative is intensified, fog and picture deposit gain simultaneously in density, resulting finally in a slow-printing negative, without better contrasts than those of the original negative. To remove fog before intensifying is attempted, some one has proposed to give the negative a wash with dilute ferric chloride acidulated with citric acid. The method has answered well occasionally, but is not reliable enough in all cases.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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" " three month's trial 50

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Eighth " " "	5 00
Business Notices, not displayed, per line	25

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All literary contributions, correspondence, "Queries," etc., should be addressed to THE EDITOR; all advertising matter to the Publishers,

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

"The Photographic Times grows more interesting and valuable with every number."— *Woman's Illustrated World.*

"Very Fine.'—"I think the photograph of Mr. Burnham, which appeared in the September issue of THE PHOTOGRAPHIC TIMES, is very fine," writes Geo. B. Case, of New Bedford, Mass. "I have observed just such pictures within a few weeks among the white mountains. As the weather grows a little colder, the mist that rises from the valley in the morning gives some very beautiful effects."

Ralph D. Cleveland, inventor of the Simplex Shutters, which have recently been put upon the market by The Scovill & Adams Company, advertises to do printing for amateurs or the trade. His specialties are: Albumen prints, platinum, aristotypes, bromides, etc.; he also develops plates and films. His address is Room 12, Windom Block, Minneapolis, Minn.

Messrs. Butts & Adams, the new Buffalo firm of photographic merchants, have issued the following circular:

"Agreeable to the promise in our general circular of August 15th, we are happy to advise you that our new store is so far settled we can supply your wants in the line of photographic supplies, and solicit your favors, which shall always have our prompt and best attention. And we hope our efforts to please will result in your continued patronage, and that our business relations will prove pleasant and profitable to both of us."

Allen Brothers send out the following:

"DETROIT, MICH., September 1st, 1892.

"It gives us pleasure to announce to our friends, that, driven from our old cramped quarters, by gradual increase of business, we have leased, for a term of years, the entire handsome, five-story and basement stone building, No. 247 Jefferson Avenue, and take possession to-day.

"With greatly increased facilities, we shall be well prepared to fill promptly all orders entrusted to us.

"We have enlarged our already large stock of photographic materials and apparatus, picture mouldings and frames, and added a carefully selected stock of all kinds of pictures.

"We submit that, with the large capital invested and complete stock carried, it is to the interest of the photographic fraternity to place their orders with us, where they will receive prompt and intelligent attention.

"We still have the exclusive agency for the United States of the famous Suter Lenses, which are now almost a necessity.

"You are cordially invited to visit us at our new quarters."

THE ANNUAL FOR 1892.

GUAYMAS, SONORA, Sept. 3, 1892.

Mr. Editor:

In looking over your highly artistic publication for '92, my attention was arrested by the doublet of the little chap sparring with himself. This is a work of real merit. I know how difficult these things are and can appreciate the excellence of this one. I send you with this, through the kindness of Messrs. Scovill & Adams, a triplet of a friend of mine, Sr. F. A. Labedie, Mexican Consul to Noyaleo, Arizona; also a doublet of myself. These are the work of Sr. Labedie, with what little assistance I could render him; and being a little more complicated than the one you published, they may be of interest to some of your readers. A modification of the old principle of the black background did it. I am, dear sir,

Yours very respectfully,
HENRY M. STANLEY.

Have you read "The Photographic Image?" It is a very helpful book both for the beginner and the more advanced worker. By the eminent authority and practical photographer, P. C. Duchochois.

Examine the "Simplex" Shutter. It is a "Daisy." Fits any lens. Only $13.50.

Also, "The Elite." Just the thing for your "Waterbury." Made, also, for stereoscopic lens. Read the advertisements.

"The 18x22 Eclipse Box came in yesterday, and it is a daisy. In thirty-five years behind the camera I have never seen a nicer or better made box of any size. The camera was packed in first-class shape, and came to me in just as good condition as when it left your house." Thus writes

D. P. BARR, San Antonio, Texas, to The Scovill & Adams Co.

"'The Photographic Times Annual' is worth many times its cost to me.

"Yours truly,
"LOU L. SHEPLER."

Business Notices.

FOR SALE.—The finest located and best paying gallery n a city of 18,000; great bargain; a rare opportunity for usi ness. Address H. A. LESURE,
241 Main St., Northampton, Mass.

FOR SALE.—Photographic gallery with an established trade; the death of the proprietor the reason for selling. None but cash buyers who mean business need apply.
WALTER G. SMITH, Youngstown, Ohio.

FOR SALE.—Well established gallery in prosperous city of 35,000 population. Address
SARGENT & CO., 170 Bank St.,
Cleveland, Ohio.

FOR SALE.—No 3 Darlot Rapid Hemispherical Lens, 5 x 8 Blair Mahogany Camera, with 8 x 10 extension, four double plate-holders, folding Tripod; all for $25, cash.
G. H. CHAMBERLIN, 874 Broadway, N.Y.

AT HALF PRICE.—I have an 8 x 10 Kranz (Braunschweig) Rapid Rectilinear Lens which I will sell for $25. Has never been used, and cost $50.
W. A. ETTLIN, 17 Chatham Square, New York.

FOR SALE.—One of the finest and best appointed galleries in New Jersey, situated in the best location in the city of Paterson; population about 85,000; established thirty-five years; rent reasonable; terms satisfactory to right party. Address L. H. DOREMUS,
240 Main St., Paterson, N. J.

WANTED.—August 28, 1891, issue of THE PHOTOGRAPHIC TIMES by Dr. A. C. Mercer, 324 Montgomery Street, Syracuse, N. Y. Will pay 25 cents for it.

FOR SALE.—4 x 5 Gennelli Camera, for making four minette pictures on a plate. Good condition. Price $12. Address G. B., care THE PHOTOGRAPHIC TIMES.

FOR SALE.—One of the oldest and best equipped galleries in the city of Denver, Col.; centrally located, and good prices. Newly refitted up to 18 x 22. Good reasons for selling. Correspondence solicited. Address "PHOTOGRAPHER," care PHOTOGRAPHIC TIMES.

FOR SALE.—A new 4¼ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
Care THE PHOTOGRAPHIC TIMES Office.

RAPID RECTILINEAR LENSES AT COST.—4 x 5, $5; 5x7, $12; 5x8, $7; 6½x8½, $8; 8x10, $12; 10x12, $18; 11x14, $24. Write for price list.
W. P. BUCHANAN, Importer, Philadelphia.

BACK NUMBERS OF SUN AND SHADE, including Nos. 3, 10, 11 and later issues, in perfect condition, 25 cents each. Regular price is 40 cents, and the earlier numbers are at a premium. THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION.

PHOTOGRAPHIC BROKERAGE.—Established especially to furnish carefully selected outfits of any make or grade to those living at a distance. Address
C. M. BROCKWAY, 33 Worth St., New York.

THE UNDERSIGNED has a few 6x5 Dallmeyer Rapid Rectilinear Lenses which he will sell for 20 per cent. from list prices. These lenses are a late importation and are all warranted. Address "TOURIST,"
care The Scovill & Adams Co.

RETOUCHING FOR THE TRADE.—First-class work guaranteed. Address A. M. S., Box 486, Rahway, N. J.

THE FINEST Platinotype Solar Enlargements and contact prints, in black and sepia, are made by
THE PLATINOTYPE CO.,
39 South 10th St., Philadelphia.
Send for price lists.

PHOTOGRAPHERS who have not the time or facilities for doing outside or interior work should never loose an order, as I am prepared to make their negatives for them of every description or any size up to 20 x 24. Printing and developing for amateurs or the trade as heretofore. I do nothing but the best work. Come and see me.
C. M. DARLING, 122 West 36th St.

LANGILL. 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

FOR SALE.—Photograph business; splendid location; doing a large business; good reasons for selling.
J. F. BROOKS, Hornellsville, N. Y.

FOR SALE.—6½ x 8½ Anthony's Compact Camera, with carrying case and one holder: new; cost $35, will sell for $25. Address
F. F. B., 502 Fulton St., Brooklyn, N. Y.

I WANT TO BUY a paying gallery; Eastern or Middle States preferred. Address, with particulars,
BOX 337, Lima, Ohio.

A BARGAIN.—No. 1 Kodak, complete and unbroken seal; price $15; cost $25. Address
LEFFERTS, care PHOTO TIMES Office.

STOLEN.—On the night, sometime, from August 15 to 16, the following articles were stolen from the Weinig gallery, Third Avenue, near 114th Street, one 11 x 14 Scovill View Camera and three double plate-holders (formerly the property of Emil Wagner, of Brooklyn); one Schnitzer & Co. Rectiscope Lens No. 4, with Rotary Stop; one Scovill Tripod. Should any one hear of these articles, or should they be offered for sale, it is requested that they report to the Editor of THE PHOTOGRAPHIC TIMES, or direct to Mr. Weinig.

PHOTO GALLERY FOR SALE.—A good stand, and can be bought cheap. H. C. RANDOLPH,
Springfield, Tenn.

STOLEN.—From the gallery of E. H. Alley, Toledo, Ohio, a No. 7 Euroscope Lens, new Voigtlander & Sohn make, No. 27578. If presented please inform E. H. ALLEY.

WANTED.—To buy for cash, Photo Gallery. Address G. A. S., Box 1914, West Chester, Pa.

NOW READY.

MORAN'S BARGAIN LIST No. 39.

It will pay you to seed for it before ordering any goods in the photo line.
R. H. MORAN,
396 Broome Street, New York.

FLASH-LIGHTS AND HOW TO TAKE THEM! A complete treatise on Flash-Light work. Fully illustrated by Louis Clarence Bennett. Price, 50 cents, Order a copy now from THE SCOVILL & ADAMS CO.

THE ELDORADO BENCH AND WALL COMBINATION makes eight different combinations, every one of which is effective and artistic. Just introduced by THE SCOVILL & ADAMS CO. Price reduced to $15.

S. P. C. EIKOQUINOL DEVELOPER.—This "ne plus ultra" developer for timed and instantaneous exposures, lantern slides and all other kinds of transparencies, photo-mechanical work and bromide paper prints is now in stock and for sale at 35 cents per bottle of 8 ounces. No other developer is now used by the members of Chautauqua School of Photography; no other has attained to equally fine results.

THE SCOVILL & ADAMS CO.,
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FOR SALE.—An Albion Outfit, 8½ x 6½, with Roll-Holder and Lenses; a 5 x 7 Outfit; a Beck Hand Camera, Stereo-Camera, and several Lenses. Send for list to
E. EDWARDS, 137 W. 23d Street.

FELT BACKGROUNDS, $1.50 per yard; a 6 ft. x 6 ft. ground only $3, by mail $3.35.
THE SCOVILL & ADAMS CO.

PHOTOGRAPHIC BOOKS FOR SALE OR EXCHANGE,

By C. W. Canfield,

1321 Broadway, New York.

"Historique et Description du Daguerreotype et Deorama," Paris, 1838, par Daguerre.

Daguerre's own book, with original lithographed portrait; original paper. Very scarce.....$5 00

Photographie par Emulsion Sensible. A. Chardon, Paris, 1880 10

American Annual, 1887, cloth 50

" " 1888, " 50

" " 1890, " 50

The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47..... 25

Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50

pp. 113, paper..... 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English), Vols. I. and II. (except No. 18), 1890, 1891.

A few *very* odd numbers of Photographic Notes Daguerreian Journal, Photographic and Fine Art Journal, Magic Lantern Journal, Photographic Herald, etc.

Employment Offered and Wanted.

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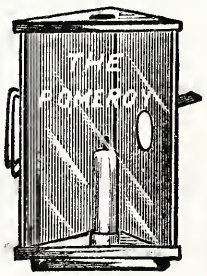
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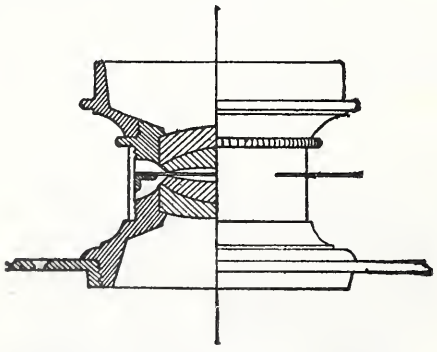
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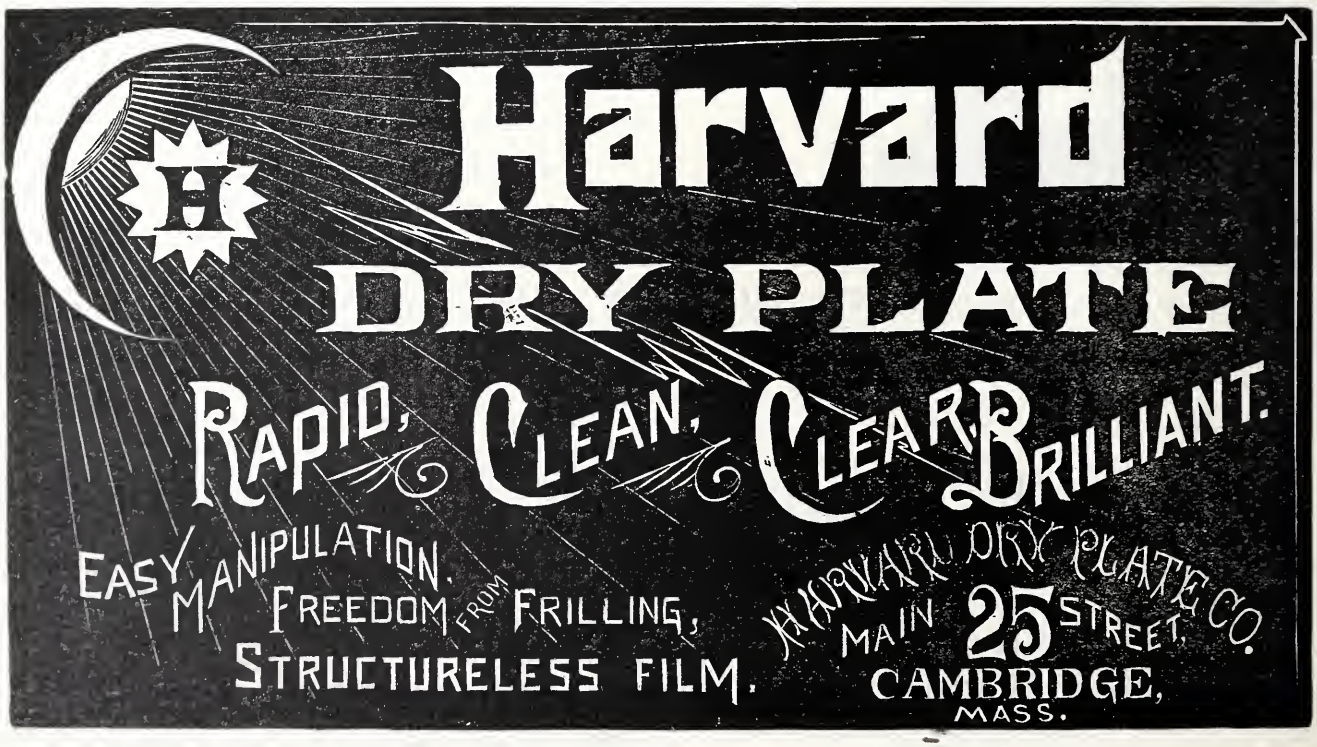
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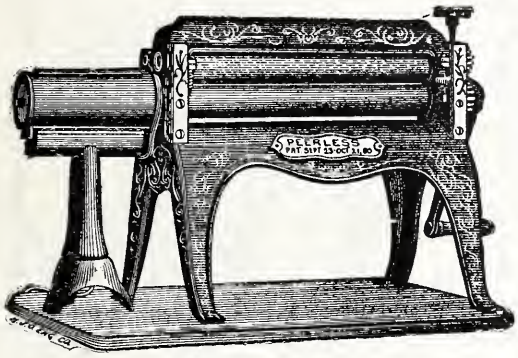
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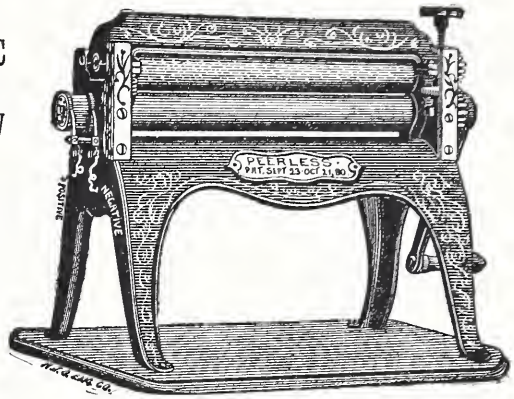
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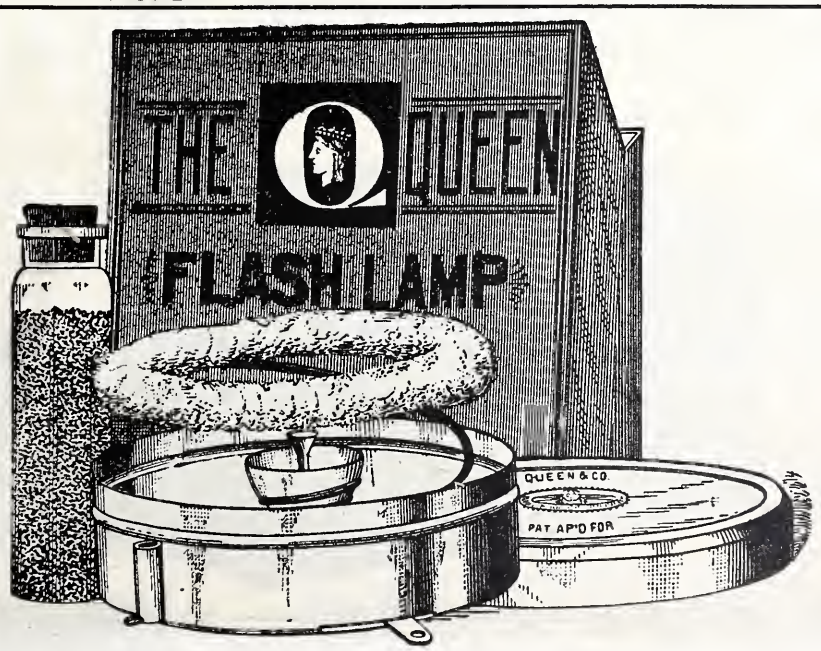
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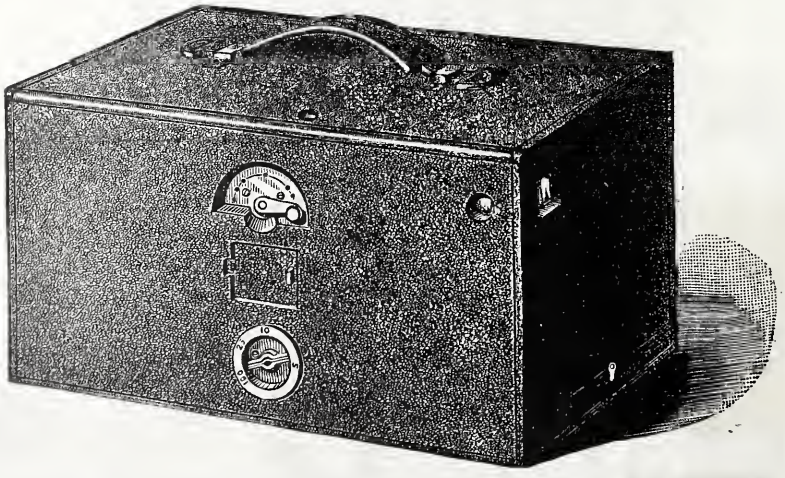
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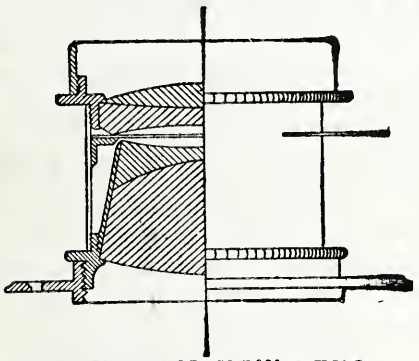
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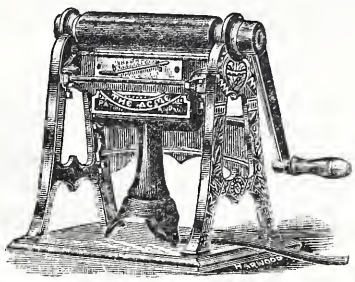
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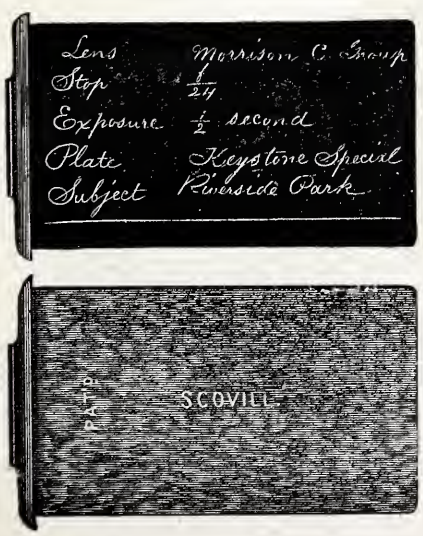
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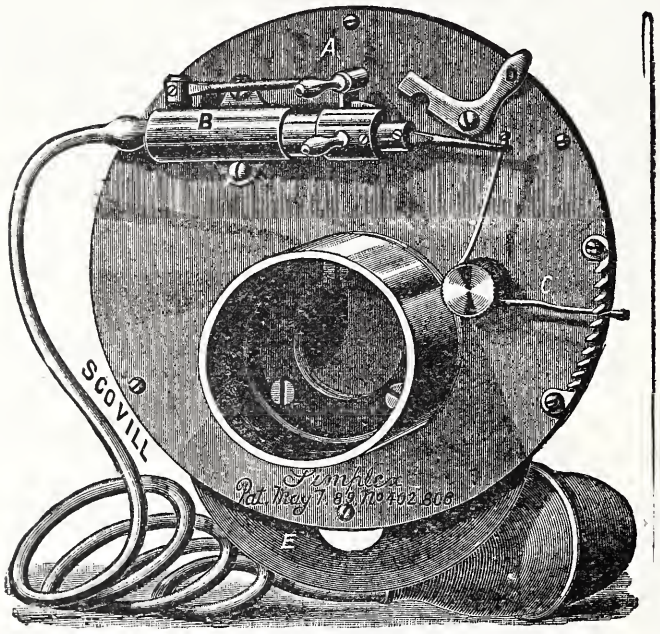
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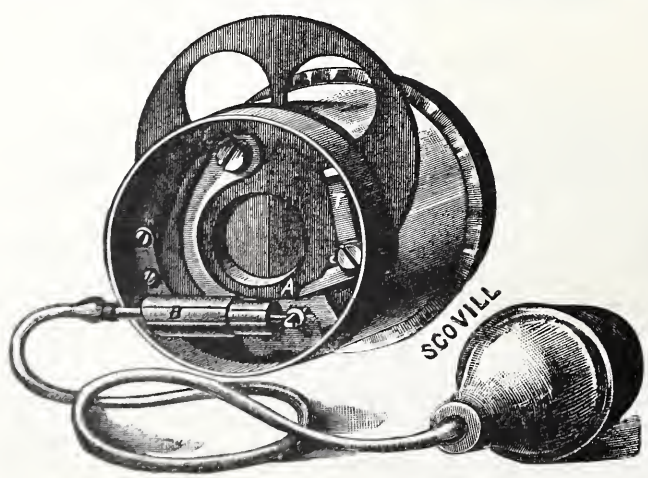
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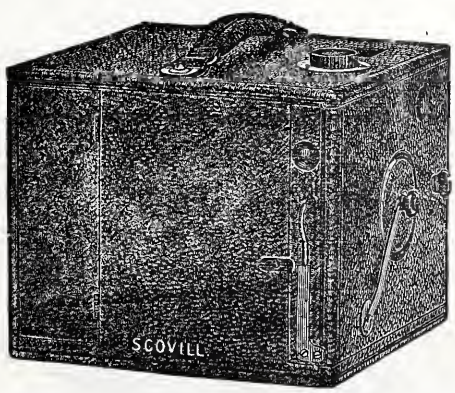
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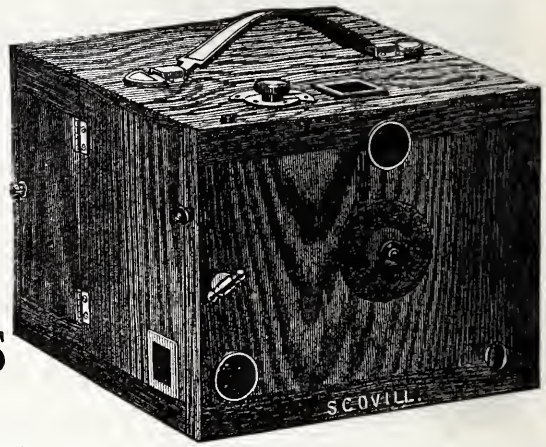
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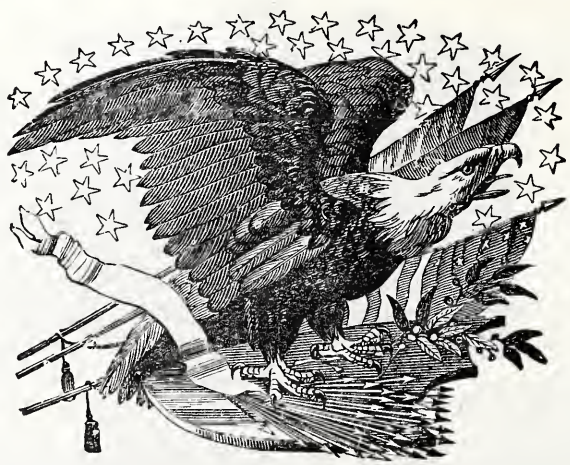
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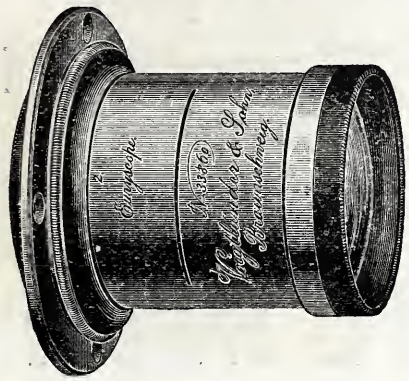
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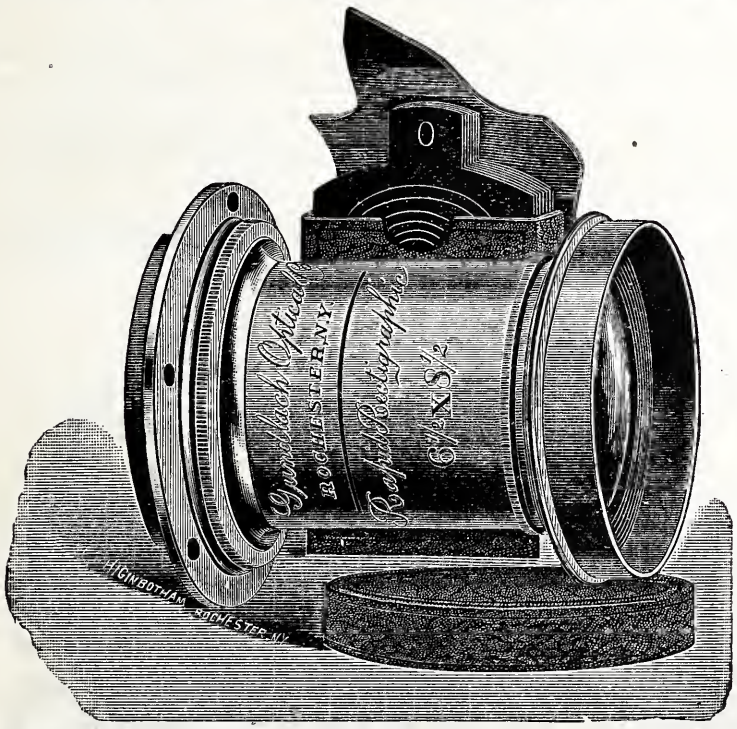
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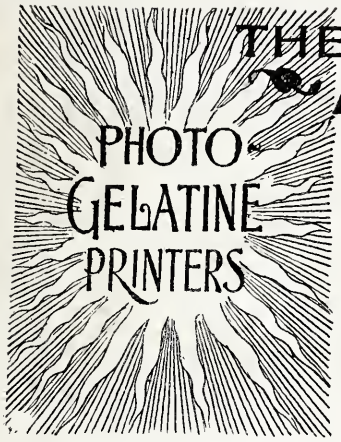


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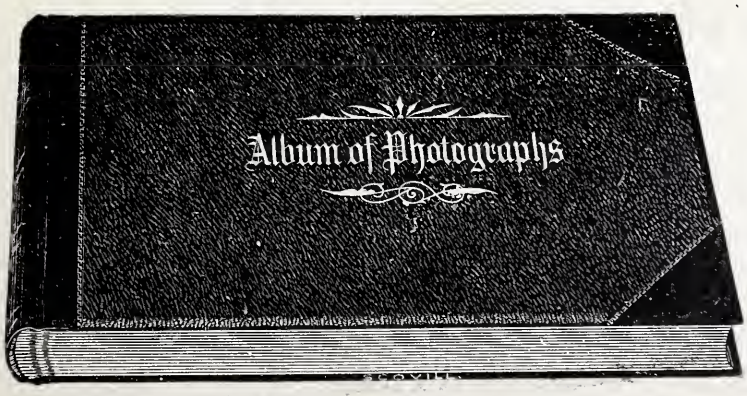
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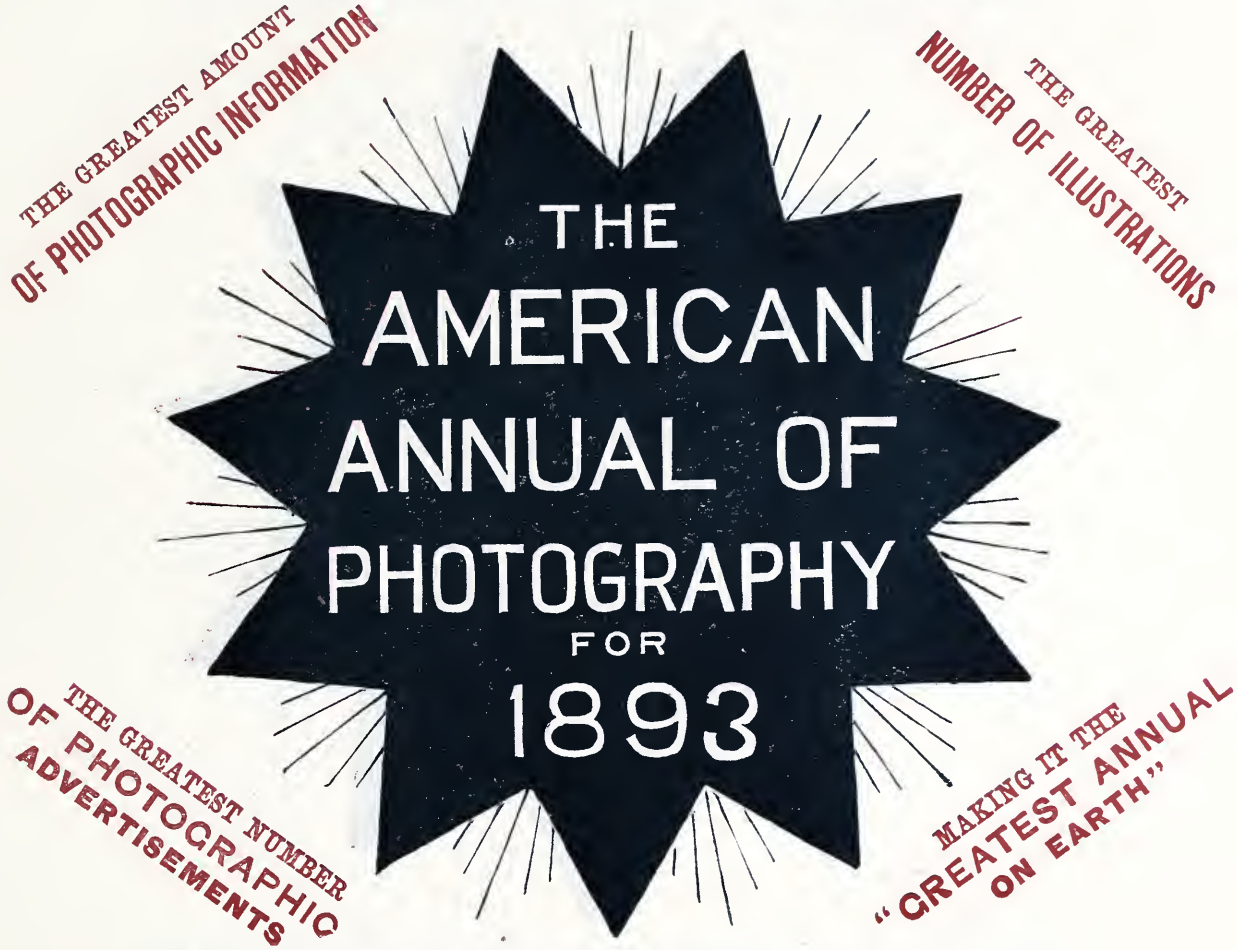
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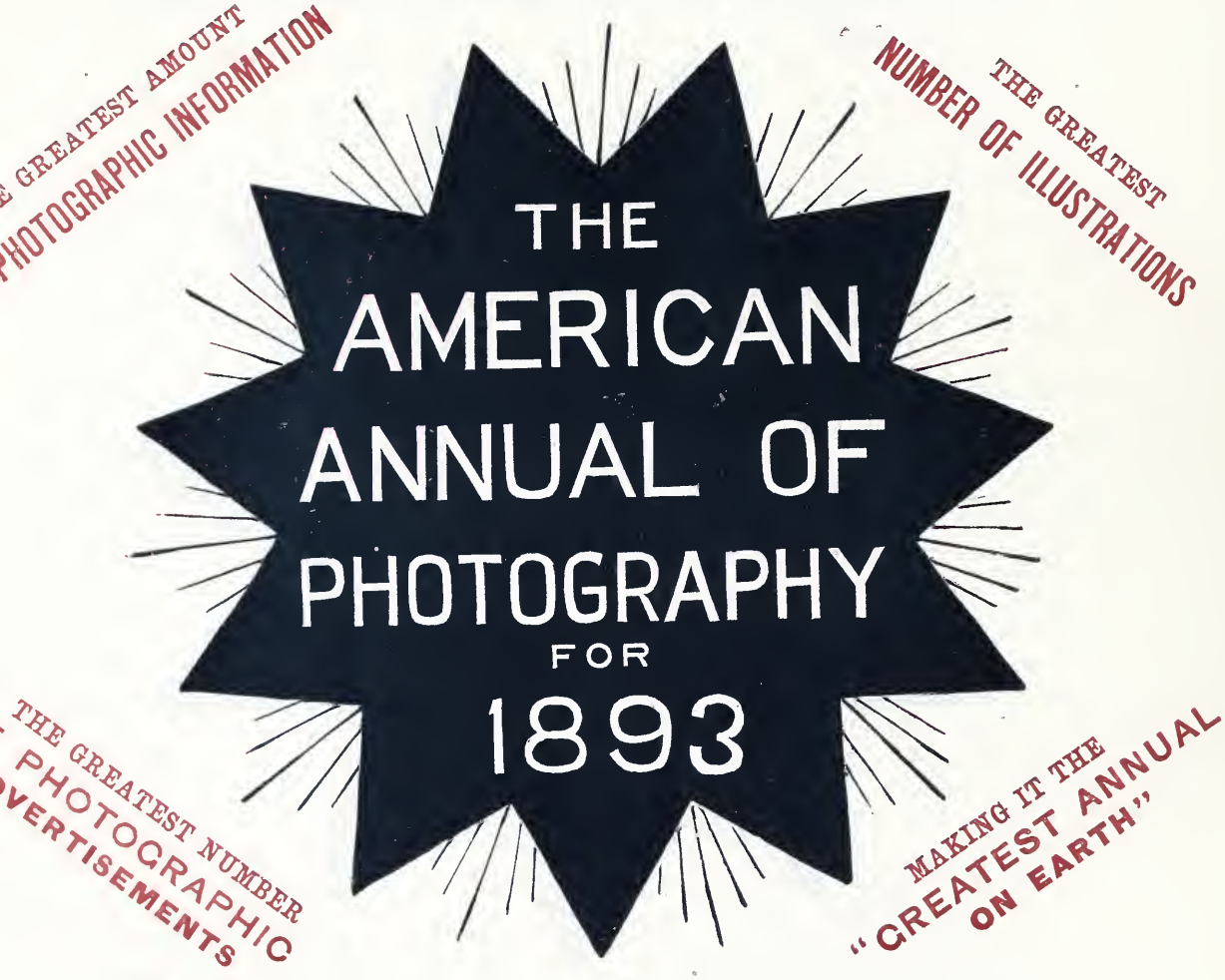
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THE SINGING CLUB.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. OCTOBER 7, 1892. NO. 577.

THE SINGING CLUB.

WE take especial pleasure this week in presenting our readers with a group by G. Waldron Smith, of Boston. Mr. Smith has made a specialty of large groups and is very successful with them. Our frontispiece this week is a fair example of Mr. Smith's artistic work in this direction. The subject is "A Musical Club," as is readily revealed in the picture. Not only was the artist's attention devoted to grouping the various individuals composing the picture so that an artistic result would be obtained in the finished picture as a whole, but it will be observed that he also carefully posed each individual member of the group, so that a characteristic likeness is obtained in every instance. This is the true method to pursue in making groups.

COLOR PHOTOGRAPHY.

EVER since Gabriel Lippmann made public his experiments tending towards the realization of the photographers' *beau ideal*, and which attracted the individual attention of every scientist and practical photographer, much has been done by other experimenters in the same direction, and it seems that even through the many fruitless attempts made during more than half a century, we are perhaps moving rapidly and systematically towards the desired goal. Many investigators have come forward and have liberally published their observations, inducing thereby others to repeat them or to the extending experimenting in similar or different directions. Step by step, progress has been made, and the height of our ambitions may yet be reached within our own times. Immediately after Lippmann came Dr. Kopp, a learned young Swiss,* who had patented a method for the reproduction of natural colors in England, and whose results very favorably compared with those of Lippmann, and the Hungarian investigator, Veresz, whose pictures created at one time so much sensation without apparent cause. E. Valenta, to whom we are indebted for many valuable suggestions in photographic chemistry, took up the matter and published his highly interesting experiments in *Photographishe Correspondenzen*. Among other things he says: "The white ground of photo-chromic pictures obtained is owing to the bichromated copper bath containing mercury, which conditions the reproduction of color to a great extent, especially when cyanide of mercury is one of its constituents."

Becquerel's color-sensitive sub-chloride of silver paper is very favorably influenced by the same bath; it increases general sensitiveness and the reproduction of color is evidently far superior.

To prepare Becquerel paper, the method of Kopp, by which the preliminary exposure to light is done under a much diluted solution of chloride of zinc was followed first, but after a long series of experiments made, it was found that a solution of sodium nitrite (0.5—1 g.) in 100 cm. of distilled water gave better results. By adhering generally to Kopp's formula in the preparing of paper, very good color-pictures of the solar spectrum have been obtained, which upon films on glass yellow and blue were but imperfectly reproduced, caused perhaps by the fact of these colors not being pure, but mixed, the yellow being evidently not a purely photographic color, but the result of bichromate of potassium not entirely washed away from the film. These colors are unfortunately not fixable.

Notwithstanding all the imperfections of the method, it is a beautiful sight to observe the bleaching out of the violet, sensitized paper into yellow, or the production of other color, under the influence of light.

Photochromic pictures, Kopp's method, were taken by the author in thirty minutes, with the wide slot of a Steinheil spectroscope and a collect-

* See PHOTOGRAPHIC TIMES, page 154, present volume.

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ing lens of 10 cm. diameter, the color effect being decidedly better than with either Poitevin or Vallot's paper.

Quite remarkable to say, Kopp's method can be also applied to chloride of silver emulsion paper, but the emulsion must not contain either silver nitrate or citrate in excess. If the emulsion has not been prepared with an excess of chloride, the paper (collodion or celloidine aristo) must be treated with dilute hydrochloric acid and chloride of zinc in dilute solution.

The formation of violet chloride of silver on exposure of the paper to light is much promoted by the presence of hydrochinon, stannous chloride or sodium nitrite. The color-sensitive paper thus prepared should be washed, dried and then subjected for about fifteen minutes to the bichromate bath with cupric sulphate. Removed from this bath, the paper is blotted between bibulous paper and, while still moist, exposed to colored light. The results are very much like those upon Kopp's salted paper.

Not any of these methods with paper, however, give as favorable and brilliant results as those with Lippmann's method with the mirror. Careful experiments affirm positively what Lippmann has said, and at the same time point towards employing a bromide of silver gelatine emulsion, more securely to be handled in the end, and of much higher sensitiveness than albumen films.

Chromo-photographs have been successfully made upon bromide of silver gelatine emulsion by the Brothers Lumière, their method of preparing the emulsion has, however, not been made public, and that proposed by the author, having given excellent results, is doubtless very interesting.

The bromide of silver should necessarily be of the finest possible grain, discernible scarcely by the microscope. It is made as follows:

A.

Gelatine	10 Gm.
Silver nitrate	6 Gm.
Water	300 Gm.

B.

Gelatine	10 Gm.
Potassium bromide	5 Gm.
Water	300 Gm.

Solution A is added in the dark-room to solution B, well shaken. The result an almost diaphanous, milky liquid.

To prevent maturation, and the consequent formation of a coarse-grained silver bromide, the solutions should not be heated to beyond 40 deg. C., and the emulsion formed be at once poured into one litre of alcohol, well stirred up with a glass rod, the precipitated emulsion be reduced to small particles and washed for twelve hours in cold and running water. After washing the emulsion shreds are placed in a 300 cm. graduate or beaker, and as much distilled water added to make the total volume equal to 300 cm.

The emulsion must be filtered through chamois leather, and may be made color-sensitive either direct or by subsequent bathing of the plates with cyanine, erythrosine or chinoline red.

To obtain red sensitiveness, of a cyanine solution in alcohol 1 in 500, from 2 to 4 cm. are added to 100 cm. of emulsion, or coated plates are bathed in the usual manner for two minutes in 100 cm. of distilled water with 2 cm. of the above cyanine solution. The plates are exposed in the specially constructed mercury plate holder, with a tolerably wide open slit of the Steinheil spectroscope and a collecting lens as above stated. The exposure averages from ten seconds to two minutes.

Of a variety of developers tried the following is given preference:

A.

Pyrogallol	4 Gm.
Water, distilled	400 Gm.
Acid, nitric	6 drops.

B.

Potassinm bromide	10 Gm.
Water, distilled	400 Gm.
Ammonium sulphite	12 Gm.
Ammonia (D=091)	14 cm.

Take of B from 2 to 3 parts, to 1 part of A, and to 12 or 14 parts of water.

The silver deposit is generally but slight, and colors begin to show after fixing, washing and drying. The acid fixing bath does well, but a 2 per cent cyanide of potassium solution does equal service.

Under-exposed or insufficiently developed negatives may be intensified after fixing and washing. Such pictures show at first little or no color, but after being treated with mercuric chloride diluted, and by reducing the whitened image with amidol and sodium sulphite, the deposit assumes a black tone, which after drying shows color quite distinctly, not as bright and brilliant, however, as Lippmann's spectrum pictures. Color is seen on the surface of the print, and by reflected light only. By transmitted light the color is of a dark brown-black.

WELL TAKEN CARE OF.

"Have you ever had your photograph taken?"

"I have, and it isn't every one's picture that is so carefully guarded and treasured."

And he omitted to add that he was Number 1,017 in the Rogues' Gallery.

EDITORIAL NOTES.

Herr Dr. Schmidt, Professor of Photography in the Polytechnicum of Karlsruh, in addressing the annual Convention of the Great German Photographic Association, spoke extensively on the use of para-amidophenol and its compounds. Of rodinal he has a favorable opinion, but says: "With Ehrmann's formula, published in the June number of *Photographishe Rundschau*, I have had the same, and frequently much better results than with rodinal." This is the formula which has been published regularly for some time in the advertising columns of this magazine.

Ordinary window-glass absorbs 4.2 per cent. of light, when of double thickness 13.5, the deep ruby used for dark-room illumination absorbs as much as 90 per cent., white opal from 60 to 70, and fine English tissue paper from 7.5 to 8 per cent., for which reason it is far better to cover the glass of a skylight room with tissue paper, then to insert panes of coarse ground-glass which absorbs as 50 and 60 per cent. of light.

A very good retouching medium for albumen prints is made by macerating ½ ounce of soap bark (Quillaza saponaria) for two hours in boiling water. After filtering the infusion add 4 ounces of alcohol and ¼ ounce of salycilic acid. When applied to albumen prints, India ink and aquarell colors take well to glossy surface.

PLAIN AND MAT-SURFACE PAPER.

With an enthusiastic friend in photo work I have been experimenting all summer on various methods of plain and mat-surface printing, having for a long time been very much disgusted with the glary mica-like surface of albumen and collodio-bromide papers, which, though perhaps giving more microscopic detail, fall far short in my mind of giving the soft yet distinctly artistic "*Je ne sais quoi*" that I find in the plain papers.

I started out with the definite object of trying every formula I could find bearing in any way upon plain paper work. You can readily fancy that among all the books and publications of the present day anent the art photographic I had laid out quite a task; but being a labor of love, I was not much appalled, and cheerfully waded through the many unscientific, impractical messes or alleged formulas, sifting out till I made the "survival of the fittest" the subject of my investigation.

Some degree of success was the result, but *no single formula* was up to the standard I had set for myself. So of all the many I selected one whose results were to my seeming best, and set about to try and improve it. Whether the rest of my brother amateurs will think so remains to be seen, and "*chacun a son gout.*"

In the first place, I desired prints on heavy paper —drawing paper—either Whatman's or any other free from anti-chlor or any bleaching compound deleterious to silver. I found many brands and weights in the market good for the purpose. Next attention was given to careful salting, with the result that I found anything with arrowroot was not right, as in most every case a stain would appear on the back or margin, and mildew very apt to put in an appearance very soon. So gelatine was used as the slight sizing or for keeping the picture on the surface, the following salting formula being the one used:

Ammonium chloride	70 grains
Sodium citrate	105 grains
Sodium chloride	25 grains
Gelatine	15 grains
Water (distilled)	12 ounces

Of course, as usual, the gelatine was allowed to swell in cold water first and then dissolved in hot water, then other articles of the formula added. On this, after filtering, the paper was floated for *three minutes*, considerable trouble being met with in the heavy drawing papers, but by much patience overcome, the curling and determination to leave the pan causing much profanity, I am sorry to say. After slowly removing from the salting solution, the papers were dried flat for a few moments, or until *set*, then hung up by clips as usual.

As I was after warm tones which I failed to get satisfactorily by many other silvering baths I tried, I settled on the following silver solution:

Nitrate of silver	60 grains
Distilled water	½ ounce

To which I added when all was dissolved:

Citric acid	25 grains
Distilled water	½ ounce

For my use I made up forty ounces (40 ounces) of this bath, and floated the paper according to negatives—from one to three minutes—using low gaslight during the operation, as the paper is very quick to print, and I am sorry to say will only keep about three days.

I used the chloro-platinate toning bath made as follows:

Chloro-platinate of potash	30 grains
Nitric acid	10 drops
Water	15 ounces

For warm prints this was diluted with twice its bulk of water—or 40 ounces of water was taken, to which two ounces of the above was added. The toning is very rapid and care was taken that no black tones came. So prints rarely remained in over a minute.

The fixing was for twenty minutes on a 4-ounce hypo to 1 pint acidulated by a half drachm of acid sulphite.

I was more than satisfied with the resulting prints, which have lost little of detail, as is almost always the case with plain paper work. The half tones are superb.

Another thing with the silvering bath is that prints silvered with it and printed about two shades darker, fix without toning to a beautiful dark sepia tint if placed directly in fixing bath without any washing. If washed the tone becomes light sepia. I cannot vouch for their permanency thus treated, but the effect is very charming.

I hope some brother amateur may try the above method and find it as satisfactory as I have.

C. H. Poor.

NOTES FROM JAPAN.

"WHILES SYNE," as folks say in Scotland—especially in Fife—I have sent you a few notes of how things photographic are going on in the land of the Rising Sun, and I think the time has come when you might once more spare me a page or so of THE TIMES for a note or two more.

There is no doubt that Japan has advanced enormously in the way of knowledge of photography within the last few years. When I reached the country five years ago, there was scarcely a single amateur photographer. Indeed, I know of only two who practised photography for amusement at that time, and professionals tried to keep their knowledge as secret as possible. Photography was still a "mystery" to the laity, and one wishing to learn had to pay an established professional heavily for his secrets. For this reason when the Photographic Society of Japan was started, and it became generally known that one object of the society was to give demonstrations of different processes open to the public in Europe and America, but hitherto kept secret in Japan, few Japanese photographers being able to read English, there was strong opposition from the greater part of the profession. Here were their trade secrets being given away for nothing! However, the society has triumphed, and there is a much more liberal feeling amongst professional photographers than there used to be, whilst the number of amateurs has increased enormously. I mean of resident amateurs, chiefly Japanese. Of the "globe-trotting" amateur we have enough, and too much at various times of the year. He is often an unmitigated nuisance. He knows little or nothing of photography but has some hand camera or other with which he goes "snapping" about indiscriminately. He comes with a note of introduction (or without). He has made forty, or four hundred "shots"; "quite interesting you know," and would like to see what they are like. "Would you mind developing them for him?" If you are weak enough to assent, and, as is probable, nothing but an oblique line here or there, representing a sea horizon, or a blurred spot here or there appears, he is not at great trouble to concea. his belief that the fault is yours. This is one kind of the species. There is compensation for the multitude of him, in the occasional arrival of an old friend, of one known by reputation, or of one whose fondness for and knowledge of photography makes it a pleasure to speak with him. Especially delightful is it to us if a man comes from any of the far away countries with all the gossip—nay, the slander—of the societies and clubs—the things that do *not* get into any of the photographic periodicals.

But to return to Japanese photographers: The leading professionals all belong to the Photographic Society of Japan, but there has been a feeling amongst them of a wish for meetings where trade and professional matters might be freely discussed. There have accordingly been instituted professional photographic societies in Tokio, and in Osaka (the second city in the Empire, and the great manufacturing centre). They do not in any way clash with the work of the "parent" society. The writer had the honor of being invited to be present and to speak at the inauguration of both the professional societies.

Amateur photography is spreading more amongst the aristocracy than in any other class. It is said that the heir apparent, Prince Harunomiya, has taken to the use of a camera. The President of the parent society, is Viscount Enomote, ex-Minister for Foreign Affairs, and Counts Okabe and Toda are Vice-Presidents. All take an active part in the working of the society. It must be admitted, however, that the greater number of the noble amateur photographers fight shy of the society. They have not yet learned that, however aristocratic be the constitution of a country, in science there should be a complete democracy. There has been talk for a year or more of institut-

ing a "Nobles' Club of Photography," and a fine building for the purpose was designed by Mr. Ishii, of the College of Engineering, but there has been difficulty in getting a suitable piece of ground.

There has been a great increase lately in the facility with which photographic chemicals and apparatus can be purchased, and the moderate prices at which they sell are remarkable. Many of the chemicals are prepared in Japan, which now has a considerable chemical industry, and are of excellent quality. Cameras and tripod stands, and a few other pieces of wooden apparatus are also made in Japan. They were somewhat crudely made when first their manufacture was begun, but there has been a great improvement and, if this continues, the Japanese will soon become the best camera makers in the world. They ought to be, considering their perfectly extraordinary skill in working wood. The great difficulty up till now has been to get suitable wood. It would seem that few Japanese woods, however well seasoned, have that absolute freedom from tendency to warp that is necessary to camera work, and mahogany has had to be imported. Moreover, till lately the brass work has been poor. Now it is very good.

American studio cameras and studio stands are still the favorites in this country, but with these exceptions nearly all imported apparatus is from Europe, chiefly from England, although France is well represented. English lenses are the favorites. The prices of American lenses, and of most kinds of apparatus are too high for the Japanese. It is quite wonderful how quickly any European photographic novelty that is of any real use is on the market here, and it is strange that the retail price is sometimes lower than in London, in spite of freight, and an ad volarem duty of 5 per cent.

I do not know of any preparations being made for a display of Japanese photographs at the "World's Fair," but a set of enlargements from earthquake and volcano photographs will form a feature of the Seismological Exhibition of the Imperial University. The photographs were mostly taken by the writer for the University, and were enlarged by him. The sizes are not uniform, but vary from about 3 feet long to over 4 feet long.

Talking of the World's Fair, I had the pleasure of meeting its commissioner, Dr. A. B. de Guerville, when he was here a few months ago. He is much interested in photography. He had the quite unprecedented honor of giving a lecture illustrated by the lantern before their Majesties the Emperor and the Empress at the Imperial Palace. The lantern was worked by the Rev. Dr. Eby and the writer. The whole affair was a great success, and the Emperor recognized the services of the three concerned by the presentation to each of a handsome piece of plate.

I have several times written telling what a delightful place Japan is for the landscape photographer. I mean for the true amateur or professional who is willing to tramp the country and take real trouble with a camera of fair size. The scenery is incomparably beautiful and varied, and there is, from time to time, every kind of atmospheric effect that can be imagined. Assistance in carrying gear, or the use of pack-horses, is to be had very cheaply. There is practically no restriction as to the use of the camera. There is no official interference. Indeed a civil word will almost always enlist the assistance of the ubiquitous policeman should it be wished. One's actions are certainly always watched with curiosity by the crowd, but they are less troublesome in their interference than anywhere else where I have used the camera.

Talking of pack-horses reminds me of a little incident that happened to me the other day. I was at Yumoto in the Nikko district. The village itself is a medicinal hot spring one. One may get an idea of the medicinal power of the water when I say that after being a couple of hours in the place any silver money in one's pocket becomes quite black by the action of sulphur. Even this is not the worst that I have known in the way of the effects of sulphur fumes in Japan. I was once photographing in the interior of the crater of a volcano (Shiranisan). There at the risk of almost complete suffocation I made three exposures. By the end of that time I found that all the brass work of the camera, including the mount of the lens, had turned a bluish-gray color. The plates all fogged on development. I attributed this to the action of the sulphur, in spite of the fact that what was evident to the senses—to a most unpleasant extent—was sulphurous acid, which I should not expect to cause fogging. But to return to the pack-horse. At Yumoto I had somewhat burdened myself by purchases of geological specimens and the like, and found that I had just a horse-load of baggage with all my photo gear on one side, the rest on the other. The photographic gear consisted of a 12 x 10 camera with three double dark slides filled, a dozen extra plates, the tripod stand and a case holding 10 lenses. The camera is not of the very lightest pattern and the cases are of leather, so that the whole lot made into one parcel for convenience sake was not light. Certainly over 100 pounds.

I am far from being a Samson, yet I am not an absolute weakling, but I could certainly not have placed this parcel on the back of a horse unassisted.

I bargained over night for a horse, with driver, to start at 5 A.M., to be at my service the whole day, the driver to help me with the gear when necessary. It may interest readers to know that the sum I had to pay for this was the equivalent of 50 cents United States money.

It had not for a moment struck me to stipulate anything about the sex of the driver, and I was not a little taken aback when, at 4.30 next morning, I saw an animal led to the hotel by a woman, small even for a Japanese woman, wearing tight-fitting trousers and a kind of shirt, both of blue cloth, the usual dress of the peasant women. With some embarrassment I explained that the assistance I wanted was chiefly in lifting the heavy package off and on the top of the wooden saddle, where it rests high up on the pack-horses of this country. I could not do this myself, and as for that mite of a creature—the mite gave a little laugh, took the heavy weight in her two hands and placed it in a twinkling on the horse's back far above her total height of some 4 feet 6 inches! There was no use of any farther protest. I never felt much smaller in my life. We went forth together—the horse and the woman and I—and the woman was most helpful. My tripod is one with folding and sliding legs. Such tripods are always a little puzzling to erect on the first trial. My companion watched me closely before the first exposure, and, after that, of her own accord quickly erected the tripod for each succeeding exposure whilst I unfolded the camera. She also, as I screwed a lens to the camera, had the corresponding diaphragms out of their case and ready to be placed in the slit—let no good reader think any evil. My friend was far from fair. She was past middle age, very ugly, and with blackened teeth. I do not say I should have been sorry had it been otherwise.

At the end of twelve hours we had made six exposures and had covered 16 miles. Unless the points of view have been carefully selected beforehand, I consider six exposures a full day's work. At the end of the day's work my guide was overjoyed on receiving a coin of a value corresponding to 14 cents, U. S. currency, for the zeal she had displayed.

W. K. Burton.

DISTORTION OF OUTLINE IN PHOTOGRAPHY.

(*Continued from page* 500 *and concluded.*)

It will be obvious at once that curvilinear distortion does not curve lines that pass through the principal axis of the lens, it shortens them in the one case and lengthens them in the other.

The method of curing this form of distortion by causing one lens to neutralize the displacing effect of another, as in rectilinear lenses, is so well known that it need not be further mentioned. But the general method of testing for curvilinear distortion is not, I think, the best. We are told to bring the image of a sash-frame, or plumb-line, or something of the sort, close to the edge of the focusing screen, and then to look for the curving of the line. A gentleman, who evidently thought that the test line was brought into this position merely because the focusing-screen frame was convenient for comparison, once told me that he had focused the longest line he could get, right from corner to corner of a 15 x 12 screen, and that it was as straight as a dart. Of course such a line was likely to be straight, however much curvilinear distortion the lens was capable of producing. This distortion consists simply of the displacement of a part of the image, and it is quite easy to estimate this displacement directly. A straight rod or a line on a flat wall has marks put upon it at convenient and regular intervals, say every three or six inches, and this is focused so that the image of its centre is at the axis of the lens, and the surface of the screen is parallel to the object. It is preferable to take a negative, as subsequent measurements are then much facilitated. So far as the distances between the points upon the plate, beginning at the centre, are equal, there is no displacement, and no curvilinear distortion detectable by the means of measurement employed. The negative is a permanent record not merely of the area over which the lens tested will work without a measurable amount of curvilinear distortion, but also shows the amounts of displacement or distortion produced on any larger plate up to, of course, the limits of the test negative itself.

It is obviously possible to cure curvilinear distortion that exists in a negative or picture by copying it with a lens giving the opposite form of distortion to that present—that is, by using a lens with its diaphragm on the other side of it. But, practically, it is difficult to get a displacement of the image that shall exactly neutralize the defect. An ability to adjust the distance between the dia-

phragm and the lens would facilitate the operation, if it led to no other trouble.

Distortion Due to the Position of the Lens.—The position of the lens is the "point of view" of the picture. It produces no distortion in copying from the flat, but when objects at different distances are photographed, an unwisely selected point of view may cause "violent perspective" in the picture. This distortion is sometimes stated to be due to the use of "short-focus" or "wide-angle" lenses, but it has nothing whatever to do with the focal length of the lens or the angle of view that it includes, except as these properties lead the photographer to select a bad position for the lens. The fault, therefore, is not in the lens at all, but in the user of it.

The more distant any given object is the smaller it appears to be. The removal of an object to twice its distance will reduce the diameter of its image on the retina or on the focusing screen to one-half, so that if the more distant of two posts of uniform height is twice as far from the lens as the other, the height of the image of the one will be one-half the height of the image of the other. It is possible that under such circumstances the nearer post will appear in the picture to be larger than it really is, and, if so, the photograph will be a distorted or exaggerated representation of the fact. If the photographer moves his lens back until it is three times further from the nearer post than at first, the image of it will now be reduced to one-third its former height, but the image of the farther post will be reduced to only one-half its former height, because the distance of the lens from that has only been doubled. The difference between their apparent heights is largely reduced, and at the same time the whole image is made smaller. By using a lens of other focal length the scale of the image can be altered to anything desired without affecting the proportion between the parts of the image.

One other illustration will suffice. In portraiture it must happen that the lens is nearer to some parts of the figure than to others. It is necessary and right that the nearer parts shall be represented on a larger scale than the more distant, but if the lens is too near to any part of the figure the difference in scale will pass beyond the bounds of truthfulness and become distortion. In Raffaelle's cartoon that represents the miraculous draught of fishes, Peter is shown as standing with both hands extended, one toward the spectator, and one away from him. The difference in size of the two hands as drawn is very apparent, but there is nothing that appears like distortion. Photographers generally endeavor to avoid such attitudes, and by so doing they do not so much escape from the fault as from a conspicuous demonstration of it. There is a very marked tendency in much of the work that we see to bring the lens too near to the subject, whether indoors or out. It is sometimes impossible to get further away, either for want of suitable apparatus, or for want of room. If then the photograph must be taken the photographer must do the best he can under the circumstances, but he should recognize his limitations, and not get into the habit of working as though he were never free from them.

The grotesque figures produced by bringing the lens near to the subject are familiar to all. It has often been stated that some photographers will make a given building or obstruction appear unduly large or unduly small by increasing the apparent size of something else, to please their customer. Such wilful distortion is of course dishonest.

Distortion of this character disappears when the photograph is looked at from the proper point, that is with one eye only, and this brought into the same position relatively to the photograph as the lens occupied when it was taken. It is due simply to the application of a correct principal in an exaggerated degree. Therefore, while some bad examples of it can be detected by any observer, it is impossible to state at what distance from any given subject distortion will begin. This must remain a matter of opinion.

Distortion Due to the Plate Itself.—We generally use flat plates for the production of negatives, and this flatness leads to distortion. A distortion which, like the last, disappears when we look at the picture with one eye from the proper point of view, and is due to the exaggeration of a correct principle. It is commonly said that distortion of this character makes columns, statues, and similar objects appear broader than they are, but does not affect their height. There is truth in the statement, but not the whole truth. Such objects are broadened, but it will be obvious that the broadening increases toward the outer side of the object and is not on an uniform scale throughout. By the use of a curved plate this distortion disappears, and the more distant object gives a smaller image than the nearer. But the cure is worse than the disease. It is better to avoid including in the picture so large an angle as will exaggerate the effect under discussion.

This form of distortion appears to have been especially neglected. It has not even been dignified with a name. It will be observed that it has a somewhat similar effect to hour-glass distortion, hence single lenses with their diaphragms behind are especially to be avoided. And it would appear

that the distortion due to the flatness of the sensitive surface being of a somewhat opposite character to pin-cushion distortion, a single lens with its diaphragm in front would have a certain advantage over a rectilinear combination in photographing from nature. The setting off of these two undesirable effects against each other is a matter that I have never seen referred to, and I should think that it is well worth investigation. But in the absence of more exact information, we may safely say that less distortion will result from putting a diaphragm in front than from putting it behind a single lens.

Distortion due to flatness of the plate is not present in copying from the flat, because the obliquity of the surface copied is equal to that of the plate and produces an equal and opposite effect. It is often ascribed to the lens, but this is an error, except in so far as that without a wide-angle lens a wide-angle of view cannot be included.

Distortion Due to the Position of the Plate.—Lines which are parallel to one another, and parallel to the sensitive surface, are parallel in the negative when curvilinear distortion is absent. It is a rule in drawing that vertical lines shall be represented as parallel, and in order to conform to this in photography from Nature, it is necessary that the sensitive plate be vertical. In copying from the flat it is sufficient that the plate be parallel to the object, and as both are generally under control, other than a vertical position is often convenient. The want of parallelism in this case, and the want of verticalness (its exact equivalent) in the other lead to distortion. Here there are two distinct effects to be traced, namely, the false gradation of scale, due to the increase or decrease of the normal distance between the lens and the various parts of the plate; and the extension of the image, due to the obliquity of the plate.

The false gradation of scale throws the vertical lines out of parallelism, and the convergence or divergence of such lines is often considered to be the only defect of improperly sloping the plate; i. is, however, only one of many secondary effectst In order to illustrate this form of distortion, a drawing of a square divided into sixteen equal squares was placed vertically, and photographed upon a plate inclined at an angle of about 21 degrees to the perpendicular. A lens of 3½ inches equivalent focal length was used, and the drawing was reduced in copying to about one-third its diameter. When the swing-back is used to facilitate focusing, that part of the plate that receives the image of the nearer details of the object is drawn backward, and the image is consequently enlarged. Such procedure is much to be deprecated, not merely on account of the distortion introduced, but because the enlargement of foreground objects exaggerate a fault which some people tell us that photographic pictures naturally suffer from. There is no especial difficulty in getting the distance represented upon a larger scale than the foreground when their images fell upon different parts of the plate, but it is obvious to any one who takes the trouble to understand the matter that this cannot be done without sacrificing the parallelism of lines that are vertical in the subject.

It is possible to cure this distortion by copying the faulty picture or negative by means of a camera under certain conditions. It is necessary, however, to pay attention to the two distinct effects, namely, the gradation of scale and the elongation of the image, and it must not be supposed that if the lost parallelism is restored, the distortion is, therefore, cured. By inclining the faulty negative or picture until the vertical lines, as depicted on the focusing screen, are parallel, the reproduction will be too short, because the vertical angle subtended by the object will be unduly reduced. If the faulty picture is kept perpendicular, and the focusing screen is sloped until the required parallelism is obtained, the image will be too long. I do not know that this subject has even been thoroughly investigated from a practical point of view. Rev. T. Perkins (*Camera Club Journal*, iv. 180) has investigated the correction of this distortion as applied to architectural subjects, that is, presumably to all negatives (or prints) of objects that are far enough off to be regarded for practical photographic purposes as at an infinite distance. He directs to measure the inclination of the focusing screen to the vertical when taking the original negative, and when copying to incline the negative at three-quarters of the observed angle, then adjusting the focusing screen until parallelism is obtained.

Conclusion.—Of course the general conclusion is to avoid distortion, but to do this is sometimes difficult, or even impossible. A few hints tending in this direction may perhaps be added, though there is nothing new in them.

1. Keep the plate perpendicular. It is absurd to talk about the truthfulness of photography, and to go out without a spirit level or a plumb line.

2. Do not include too wide an angle of view, and remember that by using the rising front of the camera the angle of view is increased on one side of the lens axis.

3. Keep far enough away from your subject.

By attending to these three matters there will be very little to fear from distortion of outline. And I would add that for photographing from Nature a

single lens with its diaphragm in front has much to recommend it, in spite of the emphasis often laid upon the advantages of rectilinearity and the inherent distortion of single lenses.

TONING BROMIDE PRINTS.

THE bromide print may be developed with ferrous oxalate, quinol or eikonogen, but in no case must full vigor be obtained; in fact, the finest results are to be obtained by over-exposure and thin images obtained with eikonogen; after fixing and well washing immerse the print in the well-known lead intensifier of Eder and Toth, which is composed of

Nitrate of lead	4 parts
Ferridcyanide of potassium	6 parts
Distilled water	100 parts

Filter.

The image becomes white from formation of the ferrocyanides of silver and lead, and this enables us to obtain almost any color we like and for convenience I now tabulate the tones and the necessary solutions.

Black, by using

Ammonium sulph-hydrate	1 part
Distilled water	3 parts

Brown, by using

Schlippe's salt	10 parts
Ammonia	5 parts
Water	150 parts

Reddish-yellow, by using

Potassium bichromate	1 part
Ammonia	1 part
Water	10 parts

Yellow, by using

Neutral chromate of potash	1 part
Water	10 parts

Green, by treating the yellow image with

Ferric chloride	1 part
Water	10 parts

Brown, by treating the yellow image with

Manganate of potash	1 part
Water	10 parts

Copper-red (Bartolozzi), by treating the yellow image with

Cupric chloride	1 part
Water	10 parts

Red-brown, by treating the image with

Nitrate of uranium	1 part
Ammonium chloride	1 part
Water	10 parts

Deep yellow, by treating the yellow image with

Iodide of potassium	1 part
Water	10 parts

Reddish-Brown, by treating the white image with

Copper sulphate	1 part
Water	10 parts

Green or reddish-grey, by treating the white image with

Cobalt chloride of sulphate	1 part
Water	10 parts

This image is first greenish and then gradually turns reddish grey.

Green, by treating the white image with

Nickel chloride of sulphate	1 part
Water	10 parts

Orange-yellow, by treating the white image with

Mercuric chloride	30 parts
Potassium iodide	45 parts
Water	100 parts

E. J. Wall.

Notes and News.

Amateur photographers are returning in large numbers from the various resorts in this country and abroad, where they have been spending the summer with their cameras. The meetings of the Camera Clubs in all parts of the country are suddenly filling up, and the exhibitions will soon be given fresh impetus by the slides from new negatives made through the summer.

Opening of the American Institute.—The regular Fall exhibition of the American Institute will be held in the Exhibition Buildings as usual, Third Avenue, between 63d and 64th Streets, opening at 8 o'clock, October 10th.

Mr. S. R. Stoddard, the well-known photographer and publisher, of Glens Falls, N. Y., has returned from an extended trip through Alaska, where he succeeded in obtaining a large collection of negatives.

Fred Hart Wilson, son of Edward L. Wilson, of *Wilson's Photographic Magazine*, and formerly connected with that periodical, has accepted a position as instructor of drawing for illustration, in the Denver Art League, of Denver, Colorado. Mr. Wilson will be remembered by many of our readers as a contributor of a number of papers on art subjects in connection with photography, and it will be the hope of all his friends in the East that he may be entirely successful in the useful and honorable career which he has has chosen.

The Society of Amateur Photographers, of New York, have secured a steamship for the Columbus Naval Parade, which occurs Tuesday, October 11th, and the Committee, consisting of T. J. Burton, Chairman, W. F. Hapgood and Frank C. Elgar, have for sale a limited number of tickets for the steamer. One hundred will be sold at $2.00 each, and 50 at $3.00 each. They may be obtained by addressing Mr. Elgar at the Society headquarters, No. 111 West 38th Street.

Correspondence.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: Allow me to explain to your readers that I am not responsible for the alteration of the title of the picture illustrating my article in THE TIMES of September 9th. Was it the printer's devil who did this thing? If so will you kindly take him to a quite retired place and—try an experiment—in electrocution on him. "Medora" is the name given in the article, and it is carefully explained that she is not intended to represent anybody in particular.

To give her a historical name, such as "Elaine," is to upset much that I have been trying to teach for years, and especially in Chapter I. of this series.

In the article the word "anachronism" is printed "anachromion." This ought to be another nail in the coffin of the young gentleman whose execution I so earnest desire.

Yours truly,

H. P. Robinson.

EXTRACT FROM A LETTER OF A CHAUTAUQUA STUDENT TO HIS INSTRUCTOR.

The writer, a gentleman of high scientific and photographic attainments, was afflicted with rheumatism last winter, mainly in hands and arms. Ascribing the cause of the disease to his practice photographic, he in his then mood abjured photography altogether, and sold for a mere song a very fine collection of valuable photographic apparatus. As we predicted, he has returned to his old love. Let us see what he has to say now.

" * * * When you read this you will exclaim, that poor fellow has a mania for letter writing, etc. Well, all right, if you say so. I feel like the Irishman did when the court asked him how he would plead. 'Guilty or not guilty.' 'He answered how the divil can I tell until I hear the evidence.' My story this time is this: I was foolish enough to rent a 5x7 camera for a few days and exposed three rolls of film in fairly good light, expecting to get a few fair pictures. The party I rented the camera from make a business of developing films, etc. He gave me as secret his formula for developing "sure shot." I was happy, for I had the whole Canadian Exposition, Niagara Falls, lake views, Cow Boys, Indians, and other scenes of interest in my little boxes, in which were the films. I was eager to see them and mixed up my developer, as per formula, filtered it, made a fixing bath (acid, of course) and waited for an afternoon when I could begin operations. The developer was pyro-soda, nothing new about it. Well, I got to work; result: slow, tedious development, and fog, fog, fog, fog, fog, fog, last the whole of the roll, the emulsion must have been a very slow one. I could not get anything like printing density, the developer got muddy, I got sick of the whole business. Next I sent for my old stand-by, eikoquinol. Strong results better, but the exposures were all under-timed.

"I then wrote to a prominent photographer of Pittsburgh and he sent me the enclosed formula which I send you, not as something new, but one I can recommend to some crank amateur like myself. The result of its use was good, clean negatives, and of good printing density. Indeed I got some too dense.

No. 1 STOCK SOLUTION.

Water	½ gallon
Sulphite soda	½ pound
Dissolve and add	
Sulph. acid	½ ounce
Hydrochinon	2 ounces

No. 2.

Water	½ gallon
Carb. potash	6 ounces

No. 3.

Water	1 gallon
Paramidophenol hydrochlorate	½ ounce
Dissolve and add	
Sulphite soda	6 ounces

For instantaneous work: No. 1, 1 ounce; No. 2, 1 ounce; No. 3, 2 ounces.

For time work: No. 1, 2 ounces; No. 2, 1 ounce; No. 3, 1 ounce.

The para brought out the detail and the hydro gave the density.

It makes gray negatives, and, as seen in the tray, they are very deceptive; they look feeble by reflected light, but in reality are dense and of good printing quality. I like the developer, can well recommend it to my brother amateurs, and as I intend to purchase soon an 8 x 10 Henry Clay, I hope confidently to make good snap-shot work on large plates.

T. J. B.

The observations made by friend B coincide with our own and that of others of the Chatauqua School. The fog (so-called pressure fog) so often occurring with transparent roll films cannot be better conquered than by the use of paramidophenol developer.

Photographic Societies.

THE MINNEAPOLIS CAMERA CLUB.

THE Minneapolis Camera Club was organized last May and was incorporated June 4th following. A committee was put at work at once looking up suitable rooms. They succeeded in securing very satisfactory quarters at No. 26 South Sixth Street, between Nicollet and Hennepin Avenues, the two principal Streets in the city. The location is a convenient one, one street car line passes the door, and nearly all the others within half a block, and only half a block from the business centre, Nicollet Ave. The Club was fortunate in finding such a location, and also fortunate in the fact that the rooms were formerly occupied by a professional photographer as a gallery, and are well adapted for the purposes of a Camera Club. The first as you enter, is the reception room and library, 12 by 14 feet in size, and is neatly furnished in antique oak. A large Smyrna rug covers the floor, which adds a bit of comfort to the general homelike air of the room. Over in one corner stands a book-case well filled with photographic literature. This is one of the instructive as well as ornamental features of the room. A reading table, covered with all the current photographic magazines, stands in the centre of the room. The next room is used as a general work-room, and contains 26 lockers. It is here that the members of the Club keep their apparatus and various other pieces of personal property, and it is here where all work of a "tinkering" nature is done.

Passing from the work-room through double doors one enters the large and commodious dark-room, which is fitted with three sinks and all the usual paraphernalia of a modern developing room. There is a gas stove for heating water and for platinotype developing. Incandescent electric light is used exclusively in this room as well as in all the others for lighting. Orange-colored paper is used as a medium for obtaining non-actinic light. The lamps are ingenious contrivances whereby any number of thicknesses of paper or glass may be used and changed at will, or the whole arrangement may be detached instantly, leaving the ordinary white light. There is space left in this room for three more sinks, should it be found necessary to put them in. Going back through the finishing room one

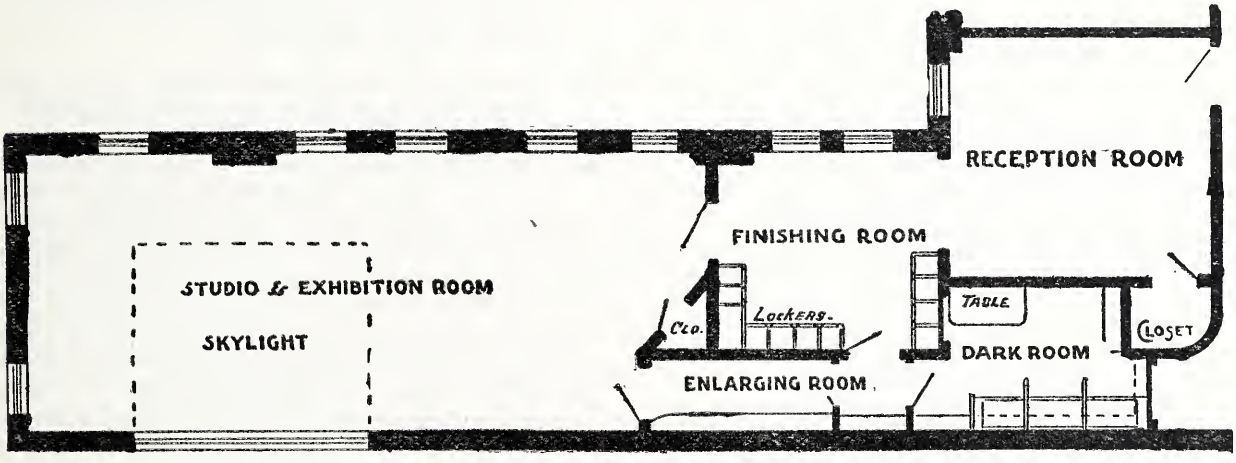
enters the studio and exhibition room. It is 15 x 36 feet in size, making it sufficiently large for all purposes for which it is intended. It can also be used as a hall for public exhibitions, as has already been done, seating 100 persons. In this room is one of the best skylights in the city. The top light is 12 x 12 feet in size, and is at an angle of about 45 degrees. The side-light is 5 by 12 feet, and reaches within two feet of the floor. It is well provided with shades and curtains so that any desired effect in lighting may be produced. The room is well equipped with backgrounds and accessories, and the Club is now negotiating for the purchase of a portrait camera and lens, which will be added in a short time.

One background is 10 by 10 feet in size and has a lantern screen on the back, so that by simply turning the frame around and placing the other backgrounds behind it and out of the way, the room is ready for a lantern entertainment. The club is fortunate in having the use of a $200 dissolving stereopticon, the property of the president, which is always available for such entertainments. One more room is an extension of the dark-room and can be reached from the studio or from the finishing room. It is a convenient place to change plates while using the studio, but it has been reserved for the enlarging apparatus, which will soon be in place. The rooms have all been newly decorated, the floors polished and the woodwork refinished. The printing room is on the next floor above, and has a capacity of about fifty frames. It is well provided with sinks and washing tanks. This gives the members all of the advantages of a well-equipped photographic studio, in addition to the many social features of the club. The regular meetings of the club are held on the second Wednesday of each month, and arrangements have been made for a series of lectures on various subjects of interest to photographers, which will extend nearly through the winter. There will also be a series of special meetings on the fourth Wednesday of each month, when some member will be selected to provide such entertainment as he is fitted for.

The membership of the club is divided into three classes, active, associate, and honorary. It is necessary that active members should be residents of Minneapolis and over eighteen years of age. Associate members include ladies, non-residents, and stock dealers. The active membership is limited to fifty, the associate to twenty-five, and the honorary to ten. The initiation fee for active members is $10 and the annual dues are also $10. The associate members are required to pay one-half the above amounts.

The club extends to the members of other photographic clubs throughout the country invitations to make use of the rooms and all their privileges while in the city.

A reception was tendered by the club Wednesday event ing, September 14th, to its many friends, in honor of the opening of the new rooms. The invitations were generously responded to, and a large number were presenwhen Ralph D. Cleveland gave an informal talk on "Pictorial Effect in Photography," illustrated by about one hundred lantern slides. An admirable feature of the entertainment was the work of the members exhibited about the rooms. The walls of the rooms are hung with framed pictures taken by the members, all of which adds to the artistic effect.



ROOMS OF THE
MINNEAPOLIS CAMERA CLUB
26 SOUTH SIXTH ST.

SCALE 0 1 2 3 4 5 6 7

The membership is at present 24 active and 2 associate, with an average of 2 new applicants each week. If the increase continues at this rate it will not be long ere the limit to membership is reached.

The officers are, President, Wm. M. Tenney; Vice-President, Wm. Channing Whitney; Secretary, A. L. Eidemiller; Treasurer, W. C. Porter.

All the business of the club is transacted by a board of ten directors, which include the above officers and the following members: Wm. T. Rolph, F. E. Haynes, J. M. Greaves, Russell M. Bennett, E. H. Moulton, Wayland B. Augir.

The Editorial Table.

Recepte und Tabellen fur Photographie und Reproductions Technik, by Dr. J. M. Eder. Halle a/S. Wilhelm Knapp.

Tables, recipes and formulas collected from previous publications, and a good many new ones, form this very interesting little compendium. In regard to weights, measures, thermometrical degree, etc., the author has paid unusual attention to the demands of English and American customs, which makes it still more valuable for us.

We have received two exceedingly fine 6½ x 8½s of water-lilies, in natural size, doubtless taken on color-sensitive plates, for the yellow and green colors are marvellously well reproduced.

We would like very much to give credit to the makers of such pictures, but there is no name attached to these.

AN AUTUMN LANDSCAPE.

By Archibald Lampman.

No wind there is that either pipes or moans ;
The fields are cold and still ; the sky
Is covered with a blue-grey sheet
Of motionless cloud ; and at my feet
The river, curling softly by,
Whispers and dimples round its quite grey stones.

Along the chill green slope that dips and heaves
The road runs rough and silent, lined
With plum-trees, misty and blue-grey,
And poplars pallid as the day,
In masses spectral, undefined,
Pale greenish stems half hid in dry grey leaves.

And on beside the river's sober edge
A long fresh field lies black. Beyond,
Low thickets grey and reddish stand,
Stroked white with birch ; and near at hand,
Over a little steel-smooth pond,
Hang multitudes of thin and withering sedge.

Across a waste and solitary rise
A ploughman urges his dull team,
A stooped gray figure with prone brow
That plunges bending to the plough
With strong, uneven steps. The stream
Rings and re-echoes with his furious cries.

Sometimes the lowing of a cow, long-drawn,
Comes from far off ; and crows in strings
Pass on the upper silences.
A flock of small grey goldfinches,
Flown down with silvery twitterings,
Rustle among the birch cones and are gone.

This day the season seems like one that heeds
With fixed ear and lifted hand
All moods that yet are known on earth,
All motions that have faintest birth,
If haply she may understand
The utmost inward sense of all her deeds.

—*Harpers' Magazine.*

INCOMPLETE.

"I'll not take those photographs."

"Why not?"

"I spent a month ornamenting the front of my dress in a certain way and your photographs don't show the quality of the buttons or the trimmings in the least!"

Queries and Answers.

350 J. A. S. sends us a detailed description of how he prints, tones, fixes and washes albumen paper prints and alongside two pictures, full of spots, and the ground of a dirty yellow color. He wants to know what causes these effects, as he is sure of his method being the right one.

350 *Answer.*—In order to prevent blistering, you have used an alum bath between toning and fixing. The alum has made the albumen film excessively hard, and fixing did not proceed as readily as usual. Your pictures are not fixed properly, that is all, and your alum bath is either too strong or the prints have remained in it too long a time.

351 S. P.—What is the cause of lantern-slides printed by contact turning yellow? The plates are Carbutt's and the developer is S. P. C. eikoquinol.

351 *Answer.*—This query has been frequently discussed in The Photographic Times, but we answer again. The first cause of yellowing is long-continued and persistent development with alkaline developer in consequence of short exposure. When hydrochinon and eikonogen, combined or singly, are for a long time exposed to air they oxidize, and the oxidation product has the property to turn gelatine into a yellow color. To avoid yellowing expose longer, and if over-exposed restrain with a bromide, and your slides will be of the desired color and glass clear ; or, what is still better, discard the developer altogether, and use instead of it the S. P. C. para-amidophenol solution, which produces a fine neutral tone, intensity to any degree without yellowing of the transparent portions.

352 C. G. M.—Can you explain why transparent film negatives show frequently bare and open spots upon which the developer seems to have had no action whatever?

352 *Answer.*—Celluloid, the carrier of the emulsion, contains large quantities of camphor, a substance easily volatilized, especially in high temperature. In summer-time, or when films are kept in warm rooms, the camphor begins to volatilize, forcing itself ultimately to the surface of the emulsion stratum, and repels then the developer, in all instances an aqueous solution.

353 Myrta Cook.—Are little air bubbles in the glass of photographic objectives injurious, or should lenses with such defects be rejected?

353 *Answer.*—In one of the earlier volumes of "American Annual of Photography," Dr. A. Steinheil, of the renowned firm of opticians of that name says, distinctly: "If otherwise of good quality lenses having a little air bubble or speck of grit within the glass, should never be rejected, the amount of light obstructed does not average more than 1/90 or 1/50 of one per cent., too insignificant to cause a perceptible prolongation of exposure.

THE PHOTOGRAPHIC TIMES.

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W. I. LINCOLN ADAMS, Editor.

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Fifth.—Because its high-class illustrations and reading matter places it upon the reading table of all the leading libraries in the country, and the photographic organizations.

Sixth.—Because it is the best edited and best printed photographic magazine published anywhere in the world.

Seventh.—Because you reach a class of buyers in it, not obtained through any other medium.

Eighth.—Because it is not read and then thrown away, but is preserved and bound, on account of its beautiful illustrations and original information.

Ninth.—Because it contains every week more original information prepared especially for its columns than any other photographic magazine.

Tenth.—Because its circulation is not local or limited, as it extends throughout the entire United States, and goes to both professionals and amateurs.

Eleventh.—Because it circulates not only in this country, but also in Europe and on the Continent.

Twelfth.—Because its pages are double the ordinary quarto size.

Thirteenth.—Because its rates are lower than any photographic publication, considering the size of page and the extent of circulation.

Fourteenth.—Because your advertisement will receive the best of treatment on the part of the compositor, and will be advantageously placed in its pages.

Fifteenth.—Because all its advertisers are endorsed by the publishers as being worthy of patronage.

Sixteenth.—Because no advertisement in any way objectionable is admitted to its pages.

Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

Commercial Intelligence.

Opal printing is coming to the front with the approach of the longer evenings of winter. A great many amateurs are making positives from their choicest negatives on these plates, as they form very attractive souvenirs of the summer, and make appropriate gifts for the approaching holidays. The Luxotype opal plate is giving most satisfactory results in the hands of amateurs and the trade, being easily worked and very uniform.

Matt surface printing seems to be gaining over the older forms of printing on highly glazed surfaces. The "vici" of The C. E. Hopkins Co., and the matt surface of Messrs. Bradfisch & Pierce, being especially popular with both amateurs and the trade.

Miss Adelaide Skeel has collected many of the bright photographic stories and sketches which she has contributed to the columns of THE PHOTOGRAPHIC TIMES, and other photographic magazines, and they will shortly be published in book form by Rufus C. Hartranft, of Philadelphia.

Mons. Flammang, Superintendent of The American Optical Co.'s works in New York, has returned from an extended trip on the Continent of Europe where he gave special attention to the examination of photographic apparatus.

Geo. H. Guardineer, with J. N. McDonnald, the well-known photographic merchant of Albany, was in New York last week, and called at the Headquarters of THE PHOTOGRAPHIC TIMES.

Mr. G. D. Millburn, of Rochester, called at the editorial rooms of THE PHOTOGRAPHIC TIMES last week, and reports that the business prospects for his new company are excellent.

Business Notices.

FOR SALE.—An old established gallery, elegantly refurnished this season; we have a large commercial trade; prices first-class; 8,000 portraits and 10,000 commercial negatives in good condition. Address
BALDWIN & SANDERSON,
21½ Centre St., Rutland, Vt.

FOR SALE.—The finest located and best paying gallery in a city of 18,000; great bargain; a rare opportunity for business. Address H. A. LESURE,
241 Main St., Northampton, Mass.

FOR SALE.—Photographic gallery with an established trade; the death of the proprietor the reason for selling. None but cash buyers who mean business need apply.
WALTER G. SMITH, Youngstown, Ohio.

FOR SALE.—Well established gallery in prosperous city of 35,000 population. Address
SARGENT & CO., 170 Bank St.,
Cleveland, Ohio.

FOR SALE.—Photographic gallery, doing a good business; splendid opening. Price, $800; half cash, balance to suit purchasers. Cause of sale, dissolution of partnership. $7,000 in 1892. J. HATFIELD, Sedalia, Mo.

AT HALF PRICE.—I have an 8 x 10 Kranz (Braunschweig) Rapid Rectilinear Lens which I will sell for $25. Has never been used, and cost $50.
W. A. ETTLIN, 17 Chatham Square, New York.

FOR SALE.—One of the finest and best appointed galleries in New Jersey, situated in the best location in the city of Paterson; population about 85,000; established thirty-five years; rent reasonable; terms satisfactory to right party. Address L. H. DOREMUS,
240 Main St., Paterson, N. J.

WANTED.—August 28, 1891, issue of THE PHOTOGRAPHIC TIMES by Dr. A. C. Mercer, 324 Montgomery Street, Syracuse, N. Y. Will pay 25 cents for it.

FOR SALE.—4 x 5 Gennelli Camera, for making four minette pictures on a plate. Good condition. Price $12. Address G. B., care THE PHOTOGRAPHIC TIMES.

PHOTOGRAPHIC BROKERAGE.—Established especially to furnish carefully selected outfits of any make or grade to those living at a distance. Address
C. M. BROCKWAY, 33 Worth St., New York.

FOR SALE.—One of the oldest and best equipped galleries in the city of Denver, Col.; centrally located, and good prices. Newly refitted up to 18 x 22. Good reasons for selling. Correspondence solicited. Address "PHOTOGRAPHER," care PHOTOGRAPHIC TIMES.

FOR SALE.—A new 4¼ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
Care THE PHOTOGRAPHIC TIMES Office.

RAPID RECTILINEAR LENSES AT COST.—4 x 5, $5; 5x7, $12; 5x8, $7; 6½x8½, $8; 8x10, $12; 10x12, $18; 11x14, $24. Write for price list.
W. P. BUCHANAN, Importer, Philadelphia.

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Simple in manipulation, requires few chemicals, results like engravings.

A sample sheet by mail, cut any size desired, *with full instructions*, $1.00. (A sheet cuts 24 4 x 5, 12 5 x 8, 9 6½ x 8½, etc.) TRY IT. It suits everybody.
E. W. NEWCOMB & CO.,
Send 10c. for our catalogue. 69 West 36th St., New York.

FOR SALE.—The largest and best equipped Photo Studio in New Hampshire. Address
H. C. BAILZ, Concord, N. H.

NOTE.—Mr. Bailz has closed an engagement to go to South America for a term of years, and, therefore, desires to dispose of his gallery.

THE UNDERSIGNED has a few 6x5 Dallmeyer Rapid Rectilinear Lenses which he will sell for 20 per cent. from list prices. These lenses are a late importation and are all warranted. Address "TOURIST,"
care The Scovill & Adams Co.

THE FINEST Platinotype Solar Enlargements and contact prints, in black and sepia, are made by
THE PLATINOTYPE CO.,
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Send for price lists.

PHOTOGRAPHERS who have not the time or facilities for doing outside or interior work should never loose an order, as I am prepared to make their negatives for them of every description or any size up to 20 x 24. Printing and developing for amateurs or the trade as heretofore. I do nothing but the best work. Come and see me.
C. M. DARLING, 122 West 36th St.

LANGILL. 10 East 14th Street, makes all kinds of outdoor negatives. Portrait photographers will do well to consult him when such is required. First prize for Architectural photographs, P. A. of A.

POSTAGE STAMP COLLECTORS!—I have a few sets of the Centennial (1876) envelope stamps cut square, red and green, all perfect specimens, which I will sell for 25 cents per set. These stamps are becoming very rare and choice specimens are hard to find. Address
"CENTENNIAL,"
Care THE PHOTOGRAPHIC TIMES.

I WANT TO BUY a paying gallery; Eastern or Middle States preferred. Address, with particulars,
BOX 337, Lima, Ohio.

A BARGAIN.—No. 1 Kodak, complete and unbroken seal; price $15; cost $25. Address
LEFFERTS, care PHOTO TIMES Office.

ARTISTIC LANDSCAPES FROM NATURE, representing the Four Seasons, in photogravure, size 11 x 14, for framing; $1.50 per set. Sent postpaid on receipt of price. MONTCLAIR PHOTOGRAVURE PUBLISHING COMPANY, Montclair, N. J.

STUDIO FOR SALE.—In a nice little town which is centre of trade for smaller towns; no competition within twelve miles; fine chance to start on small capital. Address C. B., Box 75, Chester, Windsor Co., Vermont.

WANTED.—To buy for cash, Photo Gallery. Address G. A. S., Box 1914, West Chester, Pa.

NOW READY.

MORAN'S BARGAIN LIST No. 39.

It will pay you to seed for it before ordering any goods in the photo line.
R. H. MORAN,
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S. P. C. EIKOQUINOL DEVELOPER.—This "ne plus ultra" developer for timed and instantaneous exposures, lantern slides and all other kinds of transparencies, photo-mechanical work and bromide paper prints is now in stock and for sale at 35 cents per bottle of 8 ounces. No other developer is now used by the members of Chautauqua School of Photography; no other has attained to equally fine results.

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E. EDWARDS, 137 W. 23d Street.

FELT BACKGROUNDS, $1.50 per yard; a 6 ft. x 6 ft. ground only $3, by mail $3.35.
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"Historique et Description du Daguerreotype et Deorama," Paris, 1838, par Daguerre.
Daguerre's own book, with original lithographed portrait; original paper. Very scarce.....$5 00
Photographie par Emulsion Sensible. A. Chardon, Paris, 1880 10
American Annual, 1887, cloth 50
" " 1888, " 50
" " 1890, " 50
The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47..... 25
Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper..... 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English). Vols. I. and II. (except No. 18), 1890, 1891.

A few *very* odd numbers of Photographic Notes Daguerreian Journal, Photographic and Fine Art Journal, Magic Lantern Journal, Photographic Herald, etc.

Employment Offered and Wanted.

SITUATIONS OFFERED.

A lantern-slide colorist. Address S. R. Stoddard, Glens Falls, N. Y.

A strictly first-class retoucher wanted; lady preferred. Alfred A. Adt, 56 Bank St., Waterbury, Conn.

A competent person to retouch, print, mount, spot, and finish photographs for a traveling concern; good pay to the right party. Address R. E. Ferguson, Pen Hook, Va.

A bright, intelligent young lady of good address, who understands mounting and spotting, can hear of a permanent position by addressing Philip Bucholz, Springfield, Mass.

An experienced stock house salesman and stock clerk wanted; give experience, salary expected, age, etc. Douglass & Shuey Company, 111 State St., Chicago.

A first-class workman to take full charge of photograph business; must be A1. Address C. A. Sweet, Wellsboro, Pa.

SITUATIONS WANTED.

A first-class operator and retoucher (German) wants situation; can speak several languages. Address J. K., care Mrs. Schollenbuch, 94 Avenue C., City.

As operator and retoucher, or as printer and toner. G. B. Cook, 28 Washington St., Paterson, N. J.

By a good printer and toner; can work Aristo and Omega paper; or will travel for a good house; salary expected, $12 per week. Address E. B. Phillips, Hamburg, Iowa.

In a stock house, or to travel; well acquainted with the business and experienced on the road. Address Ed. La Vere, Hamburg, Iowa.

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Printer and toner wishes situation at once; expert in all kinds of Aristo work; best of references. Address "Aristo," Photo Times Office.

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3¼x4¼	$18 00	5 x8	$22 50
4 x5	18 75	6½x8½	34 00
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A *good* article in this line is always hard to find. The *package* paper is variable and not to be relied upon. The motive of this little "Ad." is to tell you of our *special* Blue Paper. It is made fresh every day, on imported paper ; is 50 per cent. cheaper than other papers, and withal is the best. Per yard (27 inches wide), cut to any size, 25c. Send 5c. for sample. THE OBRIG CAMERA CO.,
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With para-amidophenol there is no staining of the film, as with eikonogen and hydrochinon when development is prolonged, absolute transparency and opacity is secured, and the time of exposure is reduced about 30 per cent. without injury to half-tones and middle-tints.

FORMULA FOR DEVELOPER.

Para-amidophenol (pure)	100 grains
Sodium sulphite (crystals)	3 ounces
Potassium carbonate	1¼ ounces
Water	32 ounces

FOR USE.—Take 1 ounce of the above solution and from 2 to 4 ounces of water, according to the length of exposure.

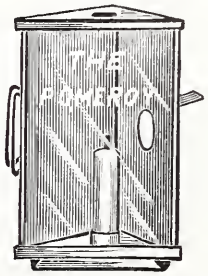
The stronger the solution the greater the intensity of the resulting negative ; the more diluted the solution the greater softness and more detail.

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Size, 6½ x 4¼ Inches.

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1st.—Because it has perfect ventilation.

2d.—Because being triangular in form it can be folded without complication, and occupies a space not greater than Webster's Pocket Dictionary, 6½ x 4¼ inches.

3d.—Because it has a socket to take candles, which may be procured in any part of the country; the annoyance of loading one's self with a supply is avoided.

4th.—Because there are no small chimneys to be broken or cleaned, nor adjusting of wicks.

5th.—Because it stands more firmly than all others, and is of the proper size, and gives proper light.

6th.—Because it has folding handles and may be carried without burning one's fingers.

7th.—Because the flame is so readily controlled, having light-tight slide at side.

8th.—Because it comes all complete in a pasteboard box, less candle, for 50 cents, and can be mailed to any part of the United States for 10 cents postage extra.

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The local class of 1892-'93 opens Monday, November 14. Term closes the second week of May, 1893.

Class hours from 9 to 12 every Monday and Saturday.

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Cost of Course of Ten Lessons, including entrance fee, printed lessons, and materials used in demonstration, $7.50.

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The Corresponding Class may be joined at any time. Tuition fee, $7. Course of instruction, one year.

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Non-graduates, or parties not connected with the school, will be subjected to examination before being admitted to the higher class.

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It is made of strong, thick and even stock, and is of an agreeable neutral drab color. It is especially suitable for vignetting. The texture of the cloth absorbs instead of reflecting light, and thus produces soft effects, and agreeable depth in print. The liability of defacement by water stains is obviated.

The prices of these grounds are as follows:

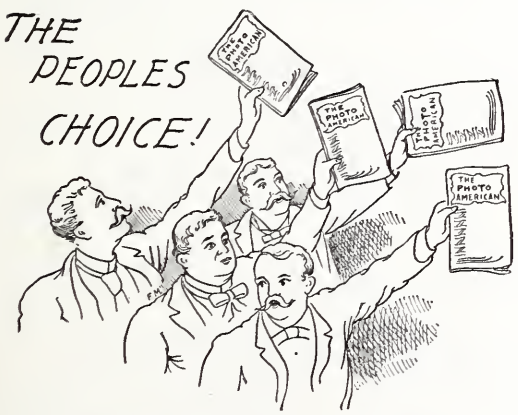
4 x 6 feet	$2.50
5 x 6 "	2.75
6 x 6 "	3.00
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It does **not** stick, nor does the surface of the print rub off.

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It works perfectly and is always clear.

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These blocks are suitable for Catalogues and the cheaper forms of illustration, but for the better grade of work we recommend the Phototype.

We are also prepared to submit estimates for all kinds of Letter-Press Printing, and preparation of Catalogues in any of the above styles of work, and will in each case give the best of its kind.

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JAS. P. HARBESON, Manager.

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BAUSCH & LOMB OPTICAL CO.,

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RAPID UNIVERSAL LENSES,

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on both of which there has been a decided reduction in prices. The New and Wonderful

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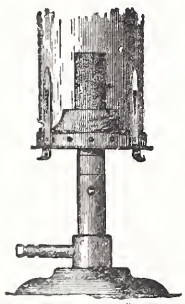
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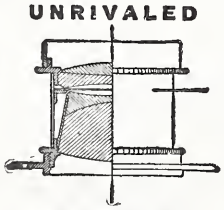
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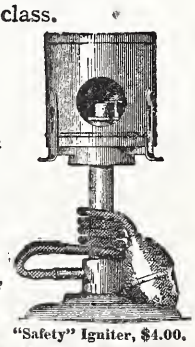
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3..1	"	4¼x 6½ "	4¼ "	" 25.00	These 5 sizes will fit into 1 flange.
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5..1	"	6½x 8½ "	6½ "	" 25.00	
6..1	"	8 x10 "	8 "	" 30.00	
7..1½	"	11x14 "	10½ "	" 40.00	These 2 sizes will fit into 1 flange.
8..1½	"	14x17 "	14 "	" 50.00	
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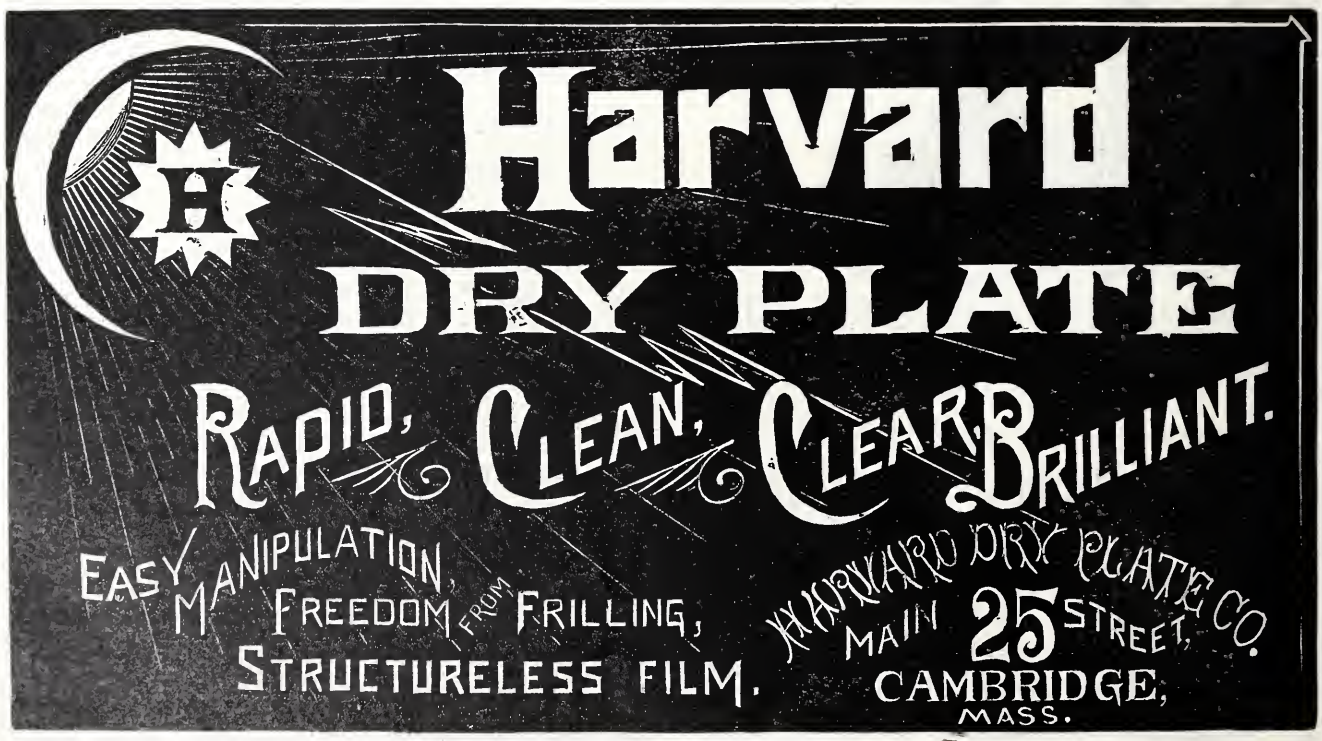
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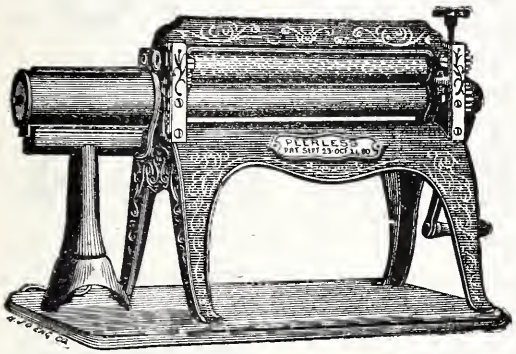
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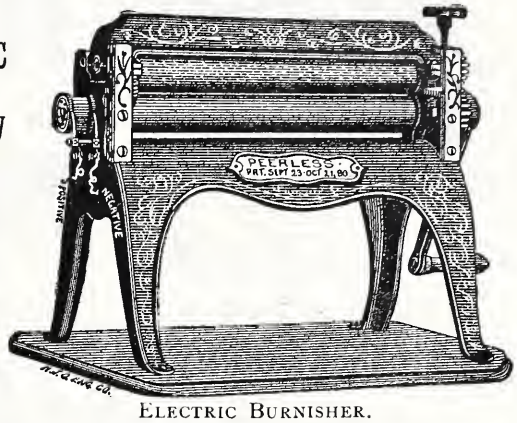
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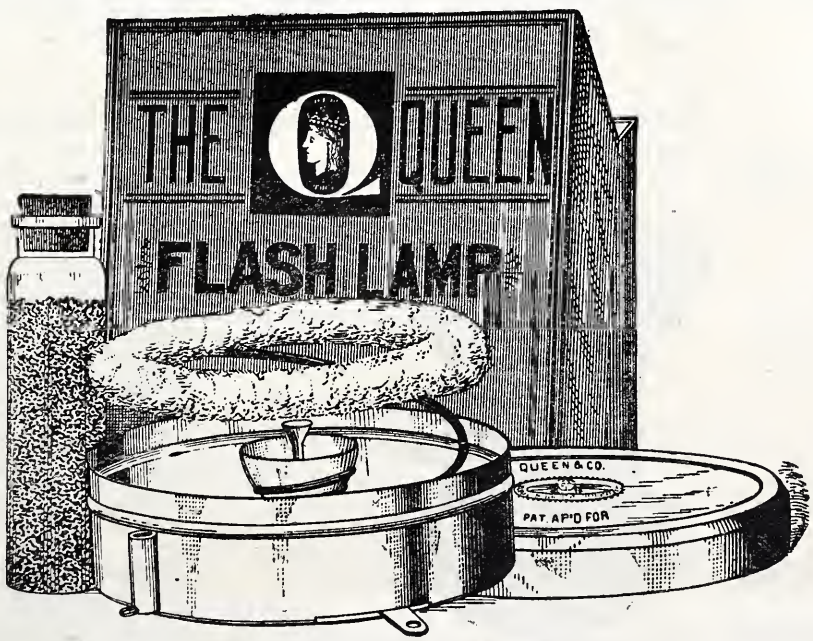
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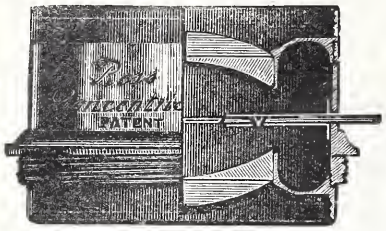
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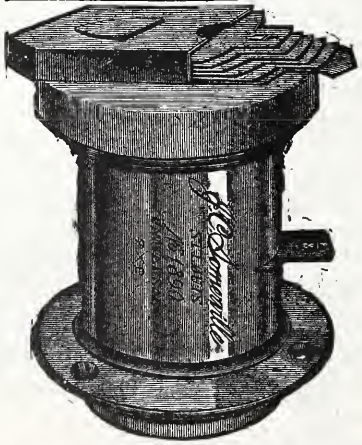
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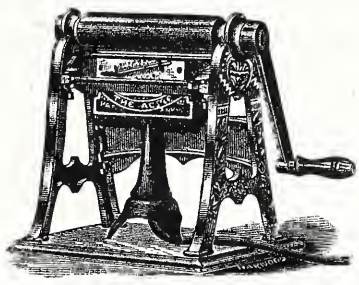
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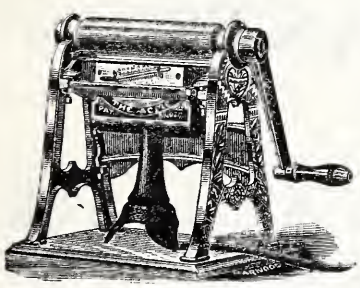
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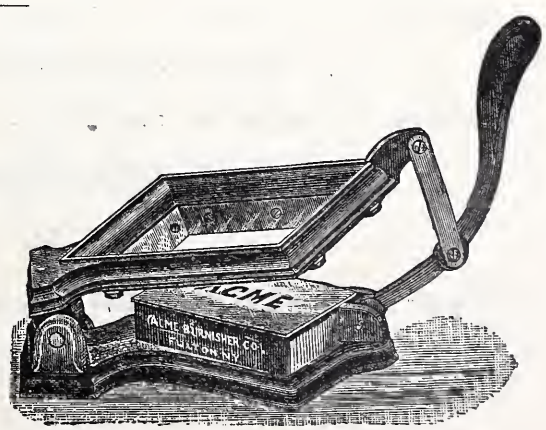
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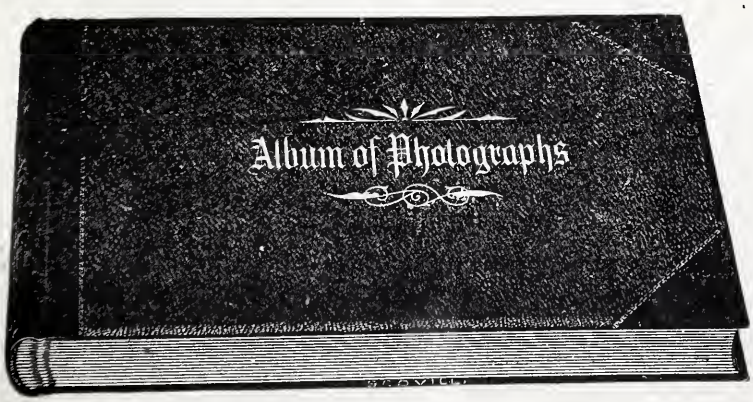
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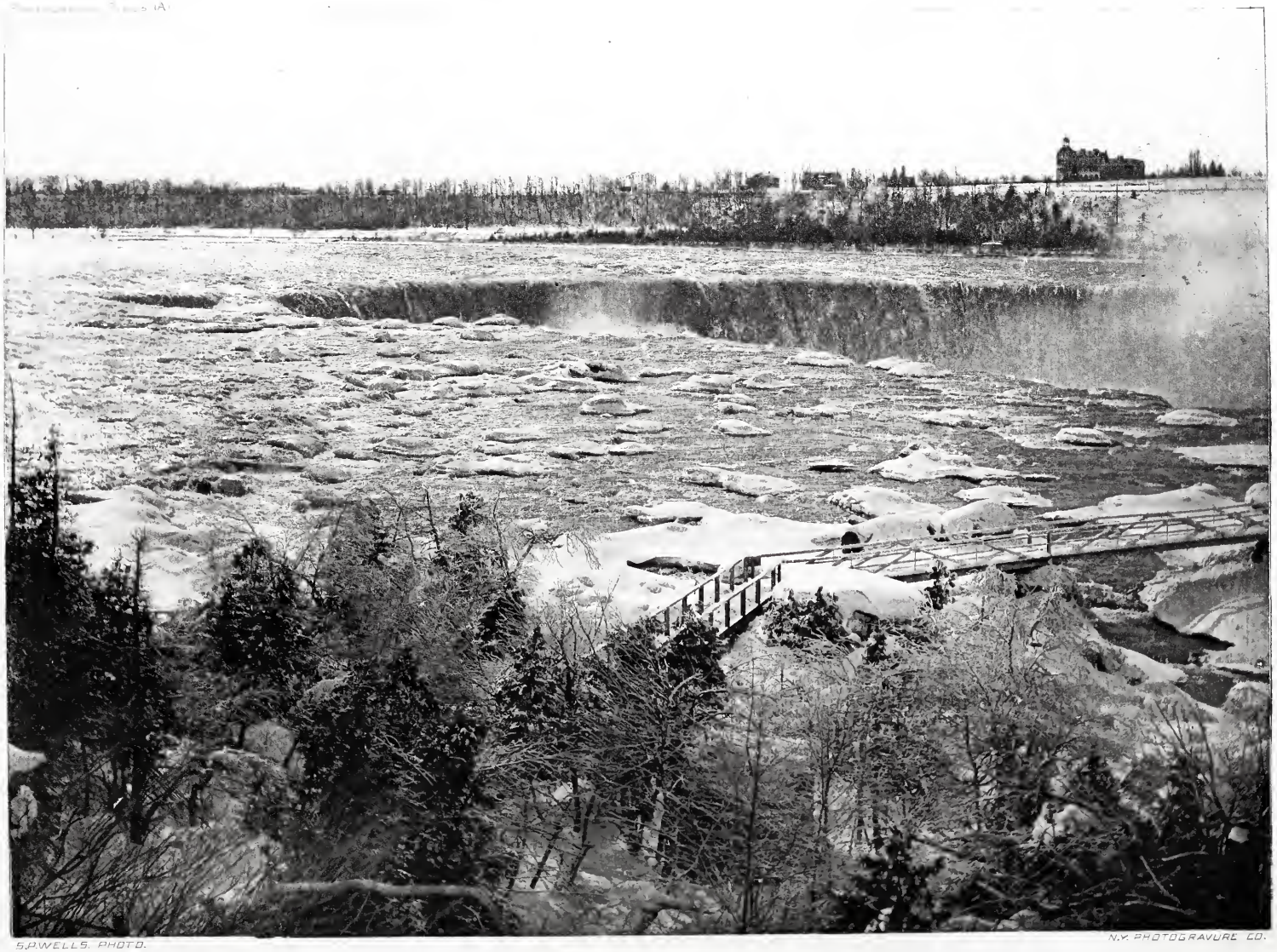
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NIAGARA IN WINTER

THE PHOTOGRAPHIC TIMES

VOL. XXII. OCTOBER 14, 1892. No. 578.

NIAGARA FALLS IN WINTER.

MANY months ago we presented our readers with a photograph of Niagara, by John E. Dumont, of Rochester; but one picture of this great phenomenon of Nature does not exhaust the subject.

We take pleasure in presenting another view of the greatest of cataracts in this issue of THE PHOTOGRAPHIC TIMES. Our present picture was made by Mr. S. P. Wells, who represents the Cramer plate in New York and the East. It was made on one of Mr. Cramer's improved isochromatic plates with a Henry Clay camera, instantaneous exposure, of course, at 4 o'clock on the afternoon of February 20th of the present year.

We think the picture reflects credit not only on the skilful operator who made it, but also on the plate which he used and the apparatus.

EDITORIAL NOTES.

ON TONING AND FIXING IN ONE OPERATION.—We are far from receding from the position we have taken in regard to the toning and fixing process in one operation, and we still and shall always regret that this process, which dates from the infancy of our art, when its chemistry was little known, and which has been condemned as yielding photographs of very uncertain permanency, has been revived. But the harm is done, and notwithstanding all that we and more authorized writers may say, it will be employed by too many photographers, on account of its simplicity and the little expense it involves, until the public objects to photographs which after a period of two months often show signs of deterioration. Therefore we must introduce toning-fixing solutions which, without giving prints as stable as those obtained by two separate operations, toning first, then fixing, will however yield proofs more permanent than those obtained by the acid toning-fixing bath now generally employed for the purpose in question.

Discarding all the compounds which at once give rise to the evolution of sulphur dioxide, but adding to the bath a salt, sodium chloride, which has the property, if not of entirely preventing the conversion into sulphuret of the silver-image, to at least retard it for a certain period, we have devised the following alkaline toning-fixing bath, which we feel confident will yield more permanent prints, if it is employed when newly compounded:

A.

Sodium thiosulphate (hyposulphite)	5 to 6 ounces
Ammonium sulphocyanide	1 ounce
Sodium chloride (common salt)	1 ounce
Borax	4 drachms
Water	1 pint

B.

Gold terchloride	15 grains
Chalk, powdered	15 grains
Water	2 ounces

Dissolve, let stand for an hour or so, then mix with A.

This bath does not tone as rapidly as the acid bath. It gives purple tones.

ABOUT DEVELOPING FORMULAS.—We often find in our exchanges new (?) formulas for the development of the image on gelatino-silver bromide films. But what is the use of formulas? No doubt, they may be good for the beginner, but not for the photographer who, knowing the action of the chemicals he uses, will always know how to compound, alter and manage a developer to suit the exposure, the lighting, the effect he wants to produce. And for this purpose, all our experiments confirm our belief that pyrogallol is the best reagent.

German photographers seem now to prefer for portraiture a strong eikonogen developer to bring out the details almost simultaneously with the high lights, and to rely on after intensification to obtain printing opacity; this is a rational manner of operating.

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FLASH LIGHTS.—A mixture of 15 grains of magnesium powder and of the same quantity of saltpetre burns in one-sixth of one second, producing a light not quite as powerful as the mixture with potassium chlorate in the same proportion.

A mixture of 15 grains each of magnesium in powder and potassium bichromate burns in three-quarters of one second, and the light is about one-tenth less powerful than that emitted by the above mixture.

THE PHOTOGRAPHY OF THOUGHTS.—Together with the photography of spirits, invisible to the common of mortals, this is the most wonderful discovery of the 19th century! The *modus operandi* has not yet been divulged, but "Since," says the discoverer, "the celebral radiations—consequence of the brain vibrating in unison with the external vibrations which convey to us the perception of things, and which alone explain the phenomena of suggestion—are analogous to the radiations of light and heat, one can easily conceive the possibility of obtaining on a photo-plate suitably sensitized, their equivalent in photographic impressions."..... ! .....?.....!.....Next!

CONFERENCES ON PHOTOGRAPHY.—Sunday lectures on photography and its applications to sciences and industry have been organized for the coming winter by Colonel Laussedat, director of the "National Conservatoire des Arts et Metiers."

We were told that a series of similar evening lectures are also to be made this winter at Columbia College, but on inquiring we found that it was unfortunately a false rumor.

It is to be desired that an official *compte rendu* of the conferences of the French Conservatory of the Arts and Trades will be published either in *fasciculi* or in whole.

A FLASH OF LIGHTNING.

A FLASH of lightning most peculiar in shape and quite abnormal in other respects, as electric phenomena have been photographed, was depicted by Mr. W. F. Catterfield, of Nutley, N. J., with his camera not long ago. The photograph is so different from those which have been shown by Mr. Jennings and others, we reproduce it for our readers

In regard to the making of the photograph, Mr. Catterfield writes as follows: "It has been suggested by scientific friends that the peculiar appearance of my flash of lightning must be due to some external cause, such as a movement of the camera at the instant of exposure (though that seems improbable, as it was resting firmly upon a piazza railing, and a rapid shutter was employed), or a multiplication, by reflection, of the single flash. Yet the picture is none the less interesting, as, in the first case it would be a proof of the formation of a flash of lightning by successive discharges taking an appreciable time, and not by instantaneous action, as has been disputed; while, if resulting from reflection, or other cause, it would be of value to specialists in electrical phenomena.

"As the negative was made without special preparation of the plate, or particular attention to existing conditions beyond a singular light-effect it is impossible to give you data accurately.



"The storm arose in the *West* about 7 o'clock on the evening of June 14, 1892, preceded by the usual sultry calm, but with a marked absence of strong wind, which caused the clouds to gather slowly, and remain steady, producing an extraordinary weird effect in the sky, which, at the moment of most interest, was perfectly clear from zenith to Eastern horizon, while the entire Western half of the heavens was covered by heavy thunder-clouds, forming a parabola-shaped canopy filled with a coppery glow from the sitting-sun shining through its walls of thick vapor, while vivid flashes of lightning added to a most remarkably beautiful display, which was still further increased by the light from the clear Eastern sky. It was one of those flashes, of singular brilliancy, that I fortunately secured an impression from. The background of darkness and the opposing brilliant light from clear sky should be taken particularly into consideration in studying the picture, as it was this rare occurrence of light that prompted attempting a photograph of what may be termed an illuminated flash of lightning, and the result cer-

tainly warrants further experiments under similar conditions.

"The temperature at time of exposure I should judge to have been about 75 deg., taking into account the cooling influence of the rain; but this is only conjectural. The storm lasted about three hours, and was not so violent, or remarkable for heavy thunder as many have been during the past summer at the same place."

USEFUL FORMULAS.

Varnishes.

Varnish for Lantern Slides.

Soft copal	1 ounce
Benzole	10 ounces

The varnish can be employed either for diapositives on collodion or on gelatine. It may be diluted. It is colorless and quite transparent. It is applied cold.

This varnish is the best for the purpose in question.

Varnishes for General Use.

1.

Alcohol, 95 deg	10 ounces
Sandarac	1 ounce
Benzoin	1 ounce
Elemi	1 ounce
Oil of lavender	½ ounce

Dissolve by means of a water-bath. Filter. This varnish should be flowed on the plate slightly warm and dried by heat.

2.

Alcohol, 95 deg	120 ounces
Bleached shellac, dry	20 ounces
Camphor	2½ ounces
Castor oil	1½ ounce

When dissolved and filtered, add

Conc. lig. ammonia, U. S. P.	2½ ounces

This varnish is applied without heating, it being self-drying. It is hard, does not soften by heat and stands a good deal of rubbing.

These two varnishes have stood the test of over thirty years' use. The latter is the best for intense negatives.

Enamelling Gelatine Aristotype Prints.

Gelatine aristotype prints acquire a very brilliant surface by simply squeezing them while wet on a ferrotype or glass plate previously talced or waxed. This is a good method. It is well known. Another one giving a much finer glace consists in coating the the plate with a thin layer of collodion, and, when the film immersed in water shows no trace of greasiness, to pass the print into contact upon it, and to strip it off after entire desiccation. This process is often employed to enamel plain and albumen silver prints.

The special advantage of this method is to protect the image from atmospheric influences, dampness particularly, which is most injurious to all the proofs on gelatine, whether negative or positive.

The enamelling collodion may be prepared thus:

Soluble cotton (pyroxiline)	6 grains
Castor oil	2 drops
Ether	4 drachms
Alcohol	4 drachms

Liquid Paste.

Let soak 5 parts of common gelatine in 5 parts of water; dissolve at a low temperature, then mix 5 parts of starch diffused in water and 5 parts of turpentine oil. Heat now the whole in stirring until an homogeneous mixture is obtained and dilute with hot water to proper consistency.

Impermeable Glue.

In 1000 parts of water dissolve 170 parts of glue and 56 parts of common gum arabic, then add a hot solution of 68 parts of alum and 110 parts of soap in 1000 parts of water.

Paper and linen immersed in this warm compound, drained, dried and calendered, are quite impervious to water.

Another more simple and excellent process consists in dipping the material in a solution of soap at 20 or 25 per 100 of water, and afterwards in a solution of sulphate of copper of the same strength, whereby an insoluble soap of copper is formed which renders the material water proof.

POINTERS FROM AN OLD PRINTER.

The printer was sick to-day, and I ascended into his sanctuary to see what could be done to keep things moving. He is a good printer (of the modern type), but I think on looking over matters that we old-timers, who had all sorts of negatives to handle, were more particular in our manipulations, and perhaps they as a class might copy a page or two out of our books with advantage to themselves.

I confess I have little admiration for the printing frame that is nowadays universally used; to my mind it requires a wicked waste of strength, and my thumbs are sore to-night with a very moderate handling of those barbarous brass springs; besides there is no provision whatever for vignet-

ting on them. However, there is no other on the market, and it would only be a waste of time and space for me to describe my pet frame, for nobody would ever try to have it made.

One of the first of my old tricks that I remembered as I worked to-day was that of having some little irregular clean tool or stick of wood lying near where I changed the paper; this was to lay the back of the frame on in such a way that it would pick up no dust; this saves much spotting.

A few days after I took charge of the printing, many years ago, in a gallery doing the leading business in one of our large cities, the lady who did the spotting remarked that her work was decreased one-half, and I know that my predecessor had been faithful in the use of the dusting brush, and I was not; I only used it when I thought it was needed, but was careful to keep dust off the backs of the frames, and as it takes too much time to turn the backs with the springs down, I was careful never to let the face get flat on the bench and so pick up dust. Some will say why not keep the bench clean, but the practical worker knows that it is impossible. Since the introduction of prepared collodion papers I have instructed the printer to dust the pieces of paper before putting them in the frame.

Once in a while the most careful operator lets pass a negative in which the contrasts are a little too strong; the modern printer rushes it through just like the others, while if the prints made from such negatives were set to one side, and the faces carefully flashed enough to tone down the fierceness of the broad light, a soft acceptable print can be made from a negative which with the regular treatment gave harsh results.

In groups, more especially bust groups, sometimes there is a sunburned man and a fair woman, and of course his face prints darker than the lady's; a very simple remedy is to take opaque quite thin on a brush and flow it smoothly on the vignette tissue paper over his face, and it works like a charm; it is so very easily done that a second trial is rarely necessary to get the proper amount of color on.

A box of opaque is a good thing to keep on the printing bench. One sometimes gets a vignette on a little too large, and all that is needed is to run around the edge of the tissue with the opaque thick on the brush, and in a moment the size and shape is reduced as required; and with the color a little thinner great softness can be obtained if a dark background has been used.

I wonder why so many printers pull thin cotton for vignettes *across* the piece. Cotton batting is like paper, it will not tear across the grain; if you begin at one end of the roll and tear it lengthwise, you can get straight edges the whole length of the piece, but attempt to tear it across and you have to take a new hold every moment to prevent its following the grain the lengthwise of the piece. My method was to roughly pull off about five or six inches (for cabinets), then taking it about two inches from the end and midway from the sides, pull it with thumb and finger, and at once a piece torn off curved as a vignette should be, and with soft regular edges; such a piece retains its shape for an indefinite length of time, and the edge can always be freshened by pulling off a little, the work of an instant, while a vignette made by pulling the cotton crosswise can rarely be used the second time, because it falls to pieces and has to be pulled over again. I kept my cottons in cardboard boxes such as panel mounts come in, just underneath the changing bench, where I could come at it handily.

Another dodge, which I don't think is properly appreciated nowadays, is what we used to call "shaping" the negatives. An opening about an eighth of an inch larger than the size of the print required was cut out of a piece of paper about as large as the negative; after being correctly placed on the negative in the position the print was desired to be in was stuck on the corners with dots of shellac. Since dry plates came in I found that any old watery paste would do if applied to the gelatine of the negative. With this for a guide there was no necessity for raising the frame to see if the paper was in correct position; it also insured that all the prints were placed exactly alike. It is hardly necessary to mention that the printer often does not notice when the shoulders are a little off in a bust, and will as usual put the paper parallel with the sides of the plate. The shape properly placed will completely obviate this difficulty, besides providing a convenient place for writing the number and order, and keeping tally of the prints made.

O. P. Rator.

NOT FIRST-CLASS.

"I told him that when my photographs were finished he should send them to me by registered mail and I would call and pay for them."

"Well?"

"And they showed the poorest work I ever saw. I told him he was a fool to send second-class matter as registered mail!"

ANTHROPOLOGICAL PHOTOGRAPHY.

[An Abstract from Major G. Pizzighelli's "Handbuch der Photographie."]

THE examination and classification of the different races and types of man is a study very much followed at the present time by *savants* travelling all over the world for scientific purposes. Portraits of individuals selected from these peoples are of main importance to the student, but whatever has been done in this direction is unfortunately of but very doubtful value, as is proven by the extensive material collected.

Excepting a few specimens made by very competent artists, these portraits are by no means correct representations of the originals, not always, however, for want of ability of the draughtsman, but far oftener because of the utter impossibility to induce savages or uncultivated people to pose for any length of time for artistic purposes. The obstacles encountered are insurmountable in most cases, and as the only means to procure correct pictures we must resort to photography. The rapidity with which photographic pictures are taken guarantees results correct in every detail, true likenesses of the subjects taken, not always necessarily a perfect technical photograph, but invariably sufficient to serve as a guide to draw from.

The manner of making anthropological photographs differs with the purposes for which they are made. Is it specially intended to depict the forms of face or body (physiognomical)? All artistic designs should be relegated to the background, position and illumination be the most simple with the view to represent the original with all its important characteristics, and to produce a picture from which, eventually, accurate measurements may be taken. But is it intended to illustrate the general habits of people, their manners and customs of life, their occupations, garments, weapons or utensils (ethnographical)? The artistic may be pushed to the front and more freedom in the arrangement be admitted.

Dr. Fritsche, an eminent authority on the subject, makes the following suggestions, when photographing human types for scientific purposes:

Always select strictly rectilinear projections, or take the head of the subject in direct en face view, or en profile; the camera should be in a horizontal position, and at such a height that a line drawn from the optical axis of the lens will strike the exact centre of the face. To procure sharp focus of projecting portions by inclining the swing-back is inadmissible. The parts of the body to be photographed should be denuded as much as possible, and as it is one of the main objects to take measurements from the finished pictures, all ornaments or accessories be dispensed with. To show contrasts distinctly a direct and simple illumination is desirable. To keep the portrait in sufficient relief the usually employed background of neutral tone should be replaced by one absolutely white or at least of such light color that the broadly lighted portions of the face retain still tone, and the high lights only are reproduced as perfect whites. Pictures resulting from this mode of illumining may not suit the artistic critic, but they offer excellent opportunity to make the desired measurements.

All anthropological photographs should be made in distinct dimensions, not less than one-eighth of the natural size of the subject, as very small pictures increase the difficulty of measuring accurately, and for technical reasons, well understood by every travelling photographer not above of one-quarter the size. Another facility to the scientist is to erect a measuring rod at an average distance from the frontal plane, upon which point focus must be taken, or stretch a tape measure in similar position. Is it impractical to do either preliminary measurement must be made from the subject by means of caliper, the distance between the cheek-bones must be found on the en face view, and on the profile that between the end of the chin and the root of the hair. Similar rules hold good with full figures. The body of the subject should be denuded, the position be erect, and to avoid displacement of muscles, the limbs be placed in symmetrical position. To show the proportion of the figures one hand may be placed on the chest, without covering the nipples, but the arm must be bent rectangularly and not be pressed against the body. The other arm hangs down with the palm of the hand inwards. To take full figure-pictures in distinct dimensions is still more desirable than with head and bust, but they may be reduced to as much as one-twentieth of the natural size. The great difficulty, impossibility sometimes, to measure direct from the subject make it indispensable to provide means for the measurement of the photographs, so highly important when comparing the labors of different investigators. To erect a measuring rod vertically is doubtless the safest method. To place a scale in the subject's hand is not practicable, neither will a squared background behind it answer, unless it be on the same focal plane with the subject.

To photograph human types we do not employ portrait objectives. The necessity to place every portion of the body in equally sharp focus, requires

an aplanatic or antiplanetic lens. The shutter be best placed in the interior of the camera, and the release effected by other means than rubber bulb and tube. People of whom it is our special desire to make anthropological photographs are of very suspicious nature and easily frightened by anything appearing supernatural. The apparatus should be therefore of the simplest construction, and be not encumbered with brightly polished metallic contrivances, or be of brilliant color. A lens of strong luminous power, a rapid plate of cabinet size or 5 x 7 will procure desirable pictures, large enough to take measurements from and eventually to make enlargements. It is almost indispensable to take the subject in the nude state, easily done with savages wearing none or but scanty clothing, but it is next to impossible to induce a Mohammedan to disrobe, holding it below his dignity to show any part of his body before an infidel. With a female of the same faith the difficulties are naturally still greater.

To photograph types of savages require immense patience and circumspection, all sorts of cunning and dodges must be resorted to to overcome their fear of sorcery and the supernatural. Dr. Hildebrandt, when in the interior of Africa, resorted to very peculiar means to induce the natives to be photographed. When entering the dominion of a new tribe a chief laboring under the effects of some disease was easily found, for these Africans are always sick or imagine to be so. To cure the disease the doctor procured a number of men to experiment with in order to find the right medicine. While measuring them the chief was dosed with purgatives and emetics, and to complete the charm the desired photographs were made.

A more gentle method to persuade savages and uncultivated people to sit for a photograph, is to make tintypes of them by instantaneous exposure and give them the picture.

To make type photographs valuable for future studies, measurement and comparison, record of every negative made should be kept, comprising the name of the subject, tribe, sex, age approximately, color of skin, condition and color of hair, color of the iris, dimensions of the body and other remarks of interest.

TRUE ART.

"Talk of your good photographs, you know Taker?"

"Yes."

"He made some photographs of Sponger and they're so true to nature that every time I see one I hear him ask me for the loan of a fiver!"

GELATINO-CHLORIDE OF SILVER PRINTING FOR PAPER AND OPALS.

[Read before the Manchester Camera Club.]

THE process of printing-out on opals is not a new one—rather the opposite—as will be seen by looking at some of the old journals, etc.; but the photographer of the present time appears to have forgotten its existence altogether, and employs the bromide opals instead. In addition to the monotonous uniform black tone presented by bromide opals, they seem to have a dead sunken-in appearance.

And now look at the cost, the lowest price of half-plate bromide opals is 5s. 6d. per dozen, while 3 ounces of chloride emulsion is 5d., sufficient to coat one dozen opals; plain opal glass, half-plate size, costs about 2s. per dozen.

The ease of acquiring any tone ranging from red to a bluish-black offered by the gelatino-chloride process, is also another consideration. As to permanency, if the plates are well fixed and washed, I see no reason why they should not be equal with the bromide.

The following is the formulas which I have found best for the emulsion; being simple in its constituents and easy to manipulate. For the solutions take:

No. 1.

Silver nitrate	½ ounce
Citric acid	1 drachm
Water	1 ounce

No. 2.

Gelatine	¾ ounce
Water	6 ounces

No. 3.

Alum	20 grains
Rochelle salts	20 grains
Ammonium chloride	10 grains
Water	1 ounce

Dissolve Nos. 1, 2 and 3 in separate vessels, then mix Nos. 2 and 3 together, and gradually add the silver solution to the salted gelatine, very slowly stirring during the whole time, so as to obtain a fine chloride of silver. If it is added in a mass the particles are apt to be coarse. When well mixed, heat up to 150 degrees, and filter through two thicknesses of muslin. (With this emulsion, washing is dispensed with).

Other formulas may be used, but for simplicity and beauty of results, I prefer the one just given.

See appendix A for citro silver emulsion.

Before proceeding with opals I will describe a method of coating paper suitable for printing-out.

The paper should have a coating of sizing made by dissolving ½ ounce of gelatine in 10 ounces of water, and adding 5 grains of chrome alum.

Porous or soft paper should be immersed in this solution, but if a hard make of paper is used it should only be coated on the smoothest side. If a very smooth surface is desired, it is better to apply a second coat after the first has been allowed to dry.

When hanging the sheet, take up the opposite corners of the paper to those previously laid hold of for the first coating, in order to have it even. When dry, roll around a ruler or something similar, the side to be covered with emulsion being outwards. This coating of gelatine is perfectly insoluble in hot water.

The final support employed for single transfer in the carbon process, may be used by those who wish to avoid the risk of not obtaining an even surface. The paper is suitable and the coating is very even and quite insoluble.

The following remarks on coating the paper with the emulsion will apply to coating the paper on *one side* with the gelatine.

Pour the emulsion into a shallow porcelain dish, which for preference should be standing in a larger dish filled with hot water, so that the emulsion may be kept from congealing too rapidly.

Take the paper to be coated by the two opposite ends, and place it on the emulsion. Let it stop a few seconds, then lift up one corner, and afterwards the other, to see if there are any air bubbles. Should these be observed, touch them with a glass rod or match stalk, to burst them. When the paper lies quite flat, take two uprights (a book or anything of the right size and shape will do) and place them at each side of the dish, about one inch higher than it. Then place a piece of glass, larger than the paper to be coated, on the uprights, and over the dish, but about two inches from one end. Lift the paper up by two corners, and draw it slowly over the glass and on to it. Leave for a few seconds to set, then hang it up in a warm, dark place, free from dust, to dry.

After the coating, the operations of toning, etc., are identically the same as opals, which I will now describe.

The opals to be coated should first be examined to see that they are perfectly even. If not, they must be ground with emery until the surface is uniform. They should also be quite free from grease or dirt. Soaking from half an hour to one hour in a weak solution of hydrochloric acid and water, and finishing with a clean rag, will effectually cleanse them.

Coating opals is a "knack" which needs to be acquired by practice; but the easiest way, I consider, to deal with ground opals is to pour the emulsion in a pool in the centre of the plate, then guide it with a glass rod or the middle finger (mind it is perfectly clean) to the edges. Pour off the superfluous emulsion into a jug, leaving only a thin film on the plate.

Place the opal on a level surface to set.

Smooth, or flashed opals are much easier to coat than those with a ground surface, and the emulsion runs to the corners without any guiding.

When set, place the opals on a rack and leave them in a dark place to dry.

If placed in an ordinary room, after they have been prepared in the evening, they will be ready the following morning for printing.

All operations, including the preparation of the emulsion and coating, should be performed be gaslight or weak daylight.

Instead of a jug, a small tea-pot may be used advantageously in coating the opals. The spout coming from below the surface prevents air bubbles from being poured over the plate.

One of the advantages of making your own emulsion is that you can alter it to suit your negatives. The one given is a medium emulsion, suitabte for negatives of ordinary density—it may be termed a rather thin quality.

If we wanted to print from a *very* thin negative, we should make up an emulsion with fifteen instead of ten grains of ammonium chloride; and for hard negatives *vice versa*.

If the opals, when prepared, are kept wrapped up in oiled paper, they will keep for two or three weeks, but they are better used fresh.

It is rather difficult to examine them during printing, as we cannot turn them back like paper; but it becomes easy enough after a little practice, either by taking the opal away from the negative completely, and if not sufficiently printed, to superimpose it carefully on the negative again until the image is fully printed; or by looking at the opal through the negative while in the frame, towards a strong light. Another method is to coat a piece of paper with the emulsion and, selecting a negative of the same density as the one to be printed, place the paper behind it. By placing both opal and paper out to print side by side you will be able to see by the paper being complete that the opal is also dark enough.

The printing of both should be continued until they are a little deeper than would be required for an albumenized print.

After printing, wash until all free silver is removed; about four changes of water.

The opals and prints I have brought with me have all been toned in the toning-bath recommended by the Ilford Company for use with their chloride paper. An acetate bath may be used—appendix B. To obtain a purple tone, withdraw the opals from the bath while there is a shade of brown in them. They dry with a much colder tone than the present while wet.

Immediately the required stage has been reached, place them in a 20 per cent. solution of salt and water, and after a rinse, fix in a 10 per cent. of hypo for ten minutes.

If a hard make of gelatine is used (such as Hienrech's), an alum bath is not required; alum being one of the constituents of the emulsion.

The washing need not be continued so long as for albumenized prints, one hour for the opals and two hours for the paper, in running water, is sufficient.

The process, while taking rather long to describe, is a simple one, and I think that if any try it they will be agreeably surprised at the results.

APPENDIX.

A.—CITRO-SILVER.

No. 1.

Silver nitrate	75	gr.
Water	1½	ounces

No. 2.

Gelatine	80	gr.
Water	½	ounce

No. 3.

Sodium or ammonium chloride	21	gr.
Potassium citrate	21	gr.
Water	½	ounce

When all are mixed add:

Alcohol	2	drachms
Citric acid	3	gr.
Chrome alum	1	gr.

B.—ACETATE BATH.

Stock.

Acetate of soda	2	drachms
Bi-carbonate of soda	20	gr.
Gold	1	tube
Water	5	ounces

Bath.

Water	20	ounces
Stock	½	ounce

For about every 80 prints toned add 1 to 2 drachms of stock.

H. Wade.

A LABORATORY FOR PHOTOGRAPHIC RESEARCH.

THE discussion upon the respective merits of ordinary and color-sensitive plates for photographing stars, which has been raised by the French astronomers, is only a single example out of a great number which might be mentioned to show how much experimental work has yet to be done before our photographic processes will fully meet the demands of scientific investigation. Modern photography has experienced very rapid development. It has been such a fascinating subject for experimentation that a great host of workers, many of them skilful and indefatigable, have contributed a countless array of facts, but intermingled with these are so many observations of a different character that the extensive literature of the subject is very confusing. What, for instance, are we to understand concerning the remarkable phenomena observed by several of the early investigators who found that certain rays of the spectrum produced chemical changes which were reversed by certain other rays? It has seemed to me that this subject would well repay investigation with the improved appliances and better knowledge of the present time. The latest application of the phenomenon that has come to my notice has been at the astro-physical observatory at Washington, in an attempt to photograph the invisible infra-red spectrum by means of a phosphorescent plate. The rays of the spectrum destroy the phosphorescence, leaving luminous bands representing the spectrum lines. It is not probable that any such method will prove of much practical value, but none the less is the investigation of the phenomenon to be advocated for the information to which it may lead concerning the nature of radiant energy.

The fact that Professor Langley has resorted to such a device to photograph the invisible part of the spectrum brings clearly before us the supposed limitations of photography in this direction. The limits of the photographed spectrum have within a few years been greatly extended into the red, and even beyond it perhaps, by special sensitizing agents or by peculiar methods of preparing plates. But the theory of the subject has not been worked out, and in this there is a very important field for research. The inducements to carry out such investigations must come from those who most need the results. In other words, here as in other cases the photographic investigator would like to know that his results will be intelligently applied, else he becomes discouraged and enters upon some other field. If the physical observer would encourage research in photography to meet his requirements, and if the astronomer would have plates perfectly adapted to his purpose, let them cease to place their reliance upon color-sensitive plates, or on any other plates prepared for the public demand, and put their photographic work in the hands of an experienced photographic chemist—not a mere operator picked up in a gallery or among amateur experimenters—but one who can apply the latest discoveries to the work in hand. It is because investigators who are not trained photographers, familiar with the processes and discoveries of the time, have undertaken to do the most difficult kind of photographic work themselves, that the results are so frequently inferior to what they might be. It is certainly a fact that the best photographic knowledge we possess is not generally applied to scientific work.

It is upon such grounds as these that I have long advo-

cated the establishment of a photographic laboratory for research in connection with one of our great institutions. Such a laboratory would not only lead to important discoveries and improved methods, but it would give an impetus to the study of photography as a science involving chemistry and physics, in preparation for work in various branches of science. The problems presented in the observatory and in the spectroscopic laboratory could then be systematically studied, as they cannot be by the workers in these different fields. For example, the astronomer desires plates for photographic star-maps, which shall be uniform in character and rapidity, unaffected by temperature or moisture, free from granularity and without the tendency to "halation" by long exposures. More than this, an effort should be made to produce a plate which will reproduce fairly well the relative actinic magnitudes, if I may coin the expression, if not the visible magnitudes of stars. That such plates can be produced scarcely admits of a doubt, but to establish the fact requires some, perhaps a great deal of experimenting. But having once accomplished the result, it would be a boon to astronomy sufficient in itself to justify the existence and liberal endowment of such a laboratory.

The mere discovery of a means to produce plates of absolutely uniform sensitiveness, measured in units of time and also spectrographically, would be of incalculable benefit to physical investigation. As regards the granularity of the image, it has been clearly demonstrated that this is greatly influenced by the development, particularly with certain plates more than others.

Now as regards plates for other special purposes, to mention a case in point, I refer once more to Professor Langley's desire to photograph the part of the spectrum which he has so ingeniously mapped with the bolometer. No one has questioned the accuracy of the indications of that instrument, but it would certainly be of interest to see a photographic reproduction of at least a portion of that invisible spectrum, to compare it with the bolometric curves. It would enable us to interpret the latter with much more confidence when it becomes desirable to reduce the curves to spectrum lines.

As already stated considerable work has been done abroad in extending the photographic action of the red rays of the spectrum. Schumann, for example, has photographed the spectrum, showing line *A* distinctly and for some distance beyond.

But when we consider the enormous extension of the invisible spectrum beyond the blue, recently photographed by Mr. Schumann,* on plates especially prepared for the purpose, we have an indication of the possibilities of scientific research in photography. There is really no reason to suppose that we have reached the photographic limit in the less refrangible end of the spectrum.

The interesting phenomenon of the sun's corona has led to many attempts to photograph it on the rare occasions offered by total solar eclipses. But so little have the photographic conditions been considered in this connection, that, as I have elsewhere remarked, the government photographic expedition was sent to Japan without a photographer, and the expedition to Africa went with commercial color-sensitized plates. Now, it would be interesting to learn the reason for the selection of those particular plates for the corona. While I am not prepared to say that they were not wisely chosen, the facts in the case not being before me, I am free to confess that I have grave doubts whether they were even as well adapted to the purpose as the ordinary dry plates. In any case, the best work on the corona has yet to be done, with plates prepared for that special purpose, and with apparatus specially arranged. Several efforts have been made in this direction abroad, not with entire satisfaction it is true, but they indicate a recognition of progress in photographic work, and a laudable disposition to apply the latest knowledge to special requirements. I am not aware that any photographic experiments are now under way in anticipation of improved methods to be applied to the solar eclipse next year. If not, we have no reason for expecting any better photographs of the corona than those of Professor Holden, which are doubtless as good as can be made without special plates. Let me add, as a purely gratuitous opinion, founded, however, upon long consideration of the subject, that I am convinced of the practicability of photographing the corona without waiting for an eclipse. To do this, however, would require no small amount of preliminary work, for which a well equipped laboratory is necessary.

Not wishing to extend this communication to undue length, I confine my remarks to these few eminently practical subjects for laboratory research, only adding that there are many others which deserve investigation, such as photographic standards of light and color, methods of recording daily solar activity, the comparison of the chemical and visual effect of light of various colors—a very important subject in stellar photography—atmospheric absorption, the application of photography to meteorology, the formation of clouds, lightning, and a host of other subjects which will suggest themselves.

The point I wish specially to make is that a photographic research laboratory would be of the greatest value as an aid to research in many branches of physical investigation. It has been my privilege to visit the laboratories of Dr. Eder in Vienna and Dr. Vogel in Berlin, both of which have contributed so much to a practical and scientific knowledge of photographic methods; but above either of these, for purely scientific research, I should say the private laboratory of Mr. Schumann, in Leipzig, although much more restricted in scope, approaches nearer to my ideal of what we most need in this country.

I trust that these few words will receive such favorable consideration and support from the scientific men of the country—especially from those who have experienced the shortcomings of photography in recording the results of their work—as they may seem to deserve, and that a laboratory such as I have indicated may soon be established either in connection with one of our large universities or by private endowment.

Romyn Hitchcock, in *Science*.

* Hitchcock, R. The latest advances in spectrum photography, *Science*, Feb. 26, 1892.

VERY MUCH PUT OUT.

DOOD—The beastly chap, he does't know how to make a photograph.

BROWN.—Why, it's a good likeness of you.

DOOD—Pshaw, a feller cawnt see the crease in my trousers at all!

A REMARKABLE MAN.

EVERY Saturday night in the year—winter or summer, stormy or clear—stages, buggies and all manner of vehicles slowly toll up the twenty-six miles of road from San José to Mount Hamilton. In the depth of winter there is snow on the ground and eternal clouds in the sky, so that frequently, the solitary stage contains a single passenger usually one of the *genus* "globe-trotter" who takes in the trip dutifully as part of his fixed itenerary. On rare occasions the roads are impassable, so that the mail has to be sent by a carrier over the trail. But during many weeks in the summer the Saturday night receptions at the Lick Observatory are enlivened by the presence of two and three hundred visitors who have taken the long and dusty and certainly very tiresome ride to the summit.

The first idea that strikes the traveller is one of surprise at the immense amount of labor which must have been involved in the construction of these great buildings on the barren peak and the ceaseless care necessary in the safe transportation of all this delicate machinery to the summit. After dusting off and laying aside wraps the visitors promptly seek a place in the line already forming around the gallery of the large dome, seventy-five feet in diameter, in the centre of which looms up the dark, impressive mass of the giant Lick telescope—so often described that its dimensions and appearance are perfectly familiar even to those who know nothing of astronomy and have never thought of visiting Mount Hamilton.

Most of the visitors, after their brief and frequently unsatisfactory glimpse through the 36-inch, find more of genuine interest in the smaller dome at the north end of the Observatory buildings. Here in the dark gloom intensified by a single "bull's-eye" hand lamp, perched up on the last round of a high observing chair, sits a young man, whose face—as an occasional lantern partly illuminates the room—appears almost grand in its honest devotion to a beloved science. Here he is king, and all the interested audience, who speak in whispers and creep about as though fearful of dispelling an illusion, are most faithful subjects. Nothing tires his patience. The same questions are asked over and over again, and answered kindly and carefully.

Here the uninformed obtains the first glimpse of the real wonders of the heavens, and feels a sense of satisfactory reward for his tiresome journey which even the awe-inspiring giant refractor fails to grant: As each party files out into the hall one hears on every side, "What is the name of the professor in the small dome?" and the janitor carelessly answers, "That's Professor Barnard, who finds comets." He does more; he finds a reward for all his labor in the pure gain to science beyond all possible computation in dollars and cents; he finds something to study and something new to learn in every field swept over by his telescope in that fathomless sky whose appearance he everywhere knows by heart, and he finds the way to the heart of every visitor to the great observatory, who naturally expects a half-hearted reception because it is a "public institution." When the last carriage rolls down the mountain side he locks himself in his twelve-inch dome, with a record book and chronometer, and studies until dawn breaks over the snow-capped Sierras.

Nearly twenty years ago this master of the telescope was a boy of ten or twelve in Nashville, slaving more than half the twenty-four hours in a local photograph gallery. He had little schooling and was the only support of his family. But he had grit and perseverance, and before long was perfect master of the photographic art. For countless hours he sat on the roof of that gallery, turning the heliostat by hand, so that the mirror used in the "solar prints" would keep the sun's image on the camera lens. He had nothing to think of at those times but how the sun travelled through the sky by day, and it was an easy transition to the reflection that the stars travelled across the heavens at night.

As assistant in a photograph gallery he had to use lenses and learn how to focus one. Soon he obtained a little hand glass and looked at the moon. Then he saved up the infrequent dollars set aside for his own use and bought a small telescope. He could read a work on astronomy while sitting on that gallery roof, and he could hunt out those things he read of in the sky at night.

About this time a well-known vendor of patent medicines offered a money prize for the discovery of comets, and Barnard had a try at it. To the surprise of the scientific world, and to the most intense astonishment of his friends and employers, this unknown Tennessean, now quite a young man, found a comet. From this time on his whole future was mapped out clearly and irresistibly. For years it was a long and disheartening struggle. First he fitted himself for admission to the Vanderbilt University, at Nashville, Tenn. During the day he earned his living; part of the night he studied, and the other part he worked with his telescope. It is doubtful whether he slept at all in those days. Now and then he found a new comet, and this helped matters, for it not only made him known all over the world, but it frequently gained a money prize to aid his early struggles.

When Barnard entered the Vanderbilt University as a student he was already well known as an astronomer. He was put in charge of the college telescope, and made it famous. By the time he took his degree the young enthusiast had discovered nine or ten unknown cometary bodies, and had printed in the scientific periodicals of this country and Europe enough observations of the planets, double stars and current phenomena to make his name as renowned in scientific annals as that of many an astronomer of double his years and a hundred times his instrumental advantages. When the Lick Observatory was completed Barnard's name was one of those immediately suggested as a capable observer with an established record and a most promising future.

And this is very briefly the history of the man who has made one of the immortal astronomical discoveries of the ninteenth century and has shown the eager body of scientists what grand posibilities lie within that giant tube on Mount Hamilton when its great light-gathering power is focused in the apt mind of a truly great observer.—*San Francisco Examiner.*

Notes and News.

The Orange Camera Club gave a very interesting exhibition of lantern slides in Orange Music Hall, Thursday evening, October 13th.

E. W. Newcomb & Co., by reason of a greatly increased business, will remove to a more spacious store directly above their present one, in the same building at No. 69 West 36th Street.

This enterprising firm was open for business during the Columbian holidays.

Photographic Societies.

THE FOOCHOW CAMERA CLUB.

This society held its second general meeting in the club rooms, on May 18th, the President, Mr. G. Siemssen, in the chair. There were present a dozen members.

The minutes of the last meeting were read by the Hon. Secretary, Mr. Mencarini, and confirmed.

The chairman announced the election of two new members, bringing the roll of this young society to twenty-two members.

With a few appropriate remarks, the chairman asked Mr. Rentzch to read his paper on "The Art of Grouping".

"Mr. Chairman and Gentlemen—In a place like Foochow, where we have so few amateur photographers, it is somewhat difficult to find a subject which shall be interesting to all the members of the club.

"In hunting round to find something suitable, Mr. Mencarini and myself thought that perhaps a few words on the posing of groups might be interesting, for although it is to be regretted there are so few actual amateur photographers in the place, still we all at times find ourselves members of a group, and of professional help as regards the posing there is none. The poor Jap is silent in his one language, and it is difficult to see (unless he lifted the members of a group about like a lot of tailor's dummies!) how he possibly could pose it; and as for the Chinese photographers, all art instinct is usually as absent from the Chinese character as the idea of honesty and truth, so there being no professional help for us, the best thing we can do is to endeavor to help ourselves, and try and fix in our minds the few fundamental rules, by no means difficult to remember, as to how a group should be arranged.

"After a few words on this subject, I will, with your permission, arrange you as a group as badly as possible, and afterwards correctly as well as I can, and Mr. Mencarini will take a flash-light picture of both, which he will proceed to develop with the very last of seven-syllabled developers.

"The first thing to consider is the background. Trees, as far as possible, should be avoided; the light falling on the leaves causes white spots in the picture, producing a very disagreeable effect. A light-colored wall is as good as anything, or, better still, the front of a house; only then the group should be placed well in front of it, so that the building may be slightly out of focus, and not by its detail detract from the figures, which, be it remembered, should be portraits.

"The members of the group should be cautioned on no account to look higher than the top of the camera, and those on the right and left should look at it, not with the eyes only, but by slightly turning the head.

"As far as it possibly can be avoided, do not have two heads next to one another on the same level, and do not have two ladies in light-colored dress one beside the other; separate them by some one in the dark clothes.

"Arrange the group so that tall persons are in the middle and short persons at each end, and in the case of ladies wearing white dresses or colors which are white to the photographic eye, place them in the front row.

"The professional photographer frequently says, 'Please put on the beginning of a smile,' but as this usually results in a complete grin, and, in some cases, even a grimace, it seems to me far better to tell people to lightly close the lips, for nothing looks worse than to see a lot of people with their mouths half open in a semi-slobbering condition.

"It is impossible in a short paper like this to enter into the deeper portion of the subject regarding the balance of the picture and so on, but if the foregoing rules are remembered, there may be some hope that the average group taken in Foochow will be somewhat improved.

"The preceding rules may be summarized as follows:

"No trees in the background.

"No looking higher than the top of the camera.

"No two adjoining heads on the same level.

"And no mouths open."

Aided by the Hon. Secretary, the lecturer took two flash-light groups of the members present, one allowing the members to place themselves as best they chose, and and another placing them in an artistic way. The plates, 10 by 12, were then developed in the society's commodious dark-room, and resulted in two brilliant negatives.

After the usual votes of thanks the meeting adjourned, —*Foochow Echo.*

The Editorial Table.

A Family Canoe Trip, by Florence Watters Snedeker. New York: Harper Brothers.

This charming little book by Mrs. Snedeker is issued in the Harper's Black and White Series, which has already commended itself to a wide and appreciative circle of readers on account of its convenient size, excellent type and illustrations.

"A Family Canoe Trip" is especially well illustrated, being for the most part embellished by excellent reproductions from photographs made by Mrs. Snedeker direct from Nature.

In her addenda after other practical advice for those intending a similar trip, she says, "one will of course carry a camera with which to preserve, and to multiply for friends, the delights of the trip. Many 'snap-shooters', however, bring home common-place collections of photographic memorabilia rather than pictures. For the latter, some knowledge of pictorial effect in photography is necessary. Read a good book on the subject, and secure the criticism of any intelligent photographer upon some good or bad pictures, and upon some preliminary attempts of your own. We followed the advice of a master of the art, and are the fortunate owners of a 'Henry Clay'

camera. This takes a 5 x 7 picture, and has a wide range of devices for securing complete pictorial results."

This is certainly practical advice and worthy of heeding by all who intend such a delightful trip as Mrs. Snedeker describes in her little book.

The Treatise of M. Mercier, "Virages et Fixages," published by Messrs. Gauthier-Villars (Paris, 55 quai des Grands-Augustins), is useful to the professional as well as to the amateur photographer, the chemist will find explained the action exerted on the gold toning by several compounds not yet studied at this point of view, the experimental photographer will find abridged in a single table, a classification of the salts employed in the toning bath; lastly, the beginner will consult it as a sure guide judiciously indicating the choice to be made amongst so many formulas.

La Practique des Projections—Les Appareils. Paris: Gauthier-Villars. It is the practical study of the lantern of projection which is described in this book by M. Fourtier. The author also explains to the reader all the special things which it is indispensable to know in order to prepare and conduct an exhibition of projections, the various forms of apparatus and the different sources of light employed.

Traite de Photographie Stereoscopic—Theorie and Practique. Published by Gauthier-Villars. This work is quite well illustrated and printed on good paper. The subject is treated thoroughly, specially the practical part, and that is most important. All the causes of failures are analyzed. This book is a good addition to our photographic library.

Die Photographische Camera und die Moment Apparate. (The 5th part of vol. I. of the author's Ausführlisches Handbuch der Photographie.) Will. Knapp. Halle a/5 publisher.

This book describes in detail the most popular and the newest Cameras for studio and field work, for instantaneous exposures, and the construction of various plate-holders, roll-holders, shutters, tripods, etc., among them several of American manufacture. To photogrammetric apparatus, the photo-theodolit, the solar camera and the phototele objective much attention is paid. Like all of Eder's works, this is interesting and very instructive.

Record of Photographic Patents.

483,135. Diaphragm for Photographic Lenses. Edgar R. Bullard, Wheeling, W. Va.

483,606. Device for Modifying and Controlling Rays of Light for Photographic Purposes. Amasa P. Flaglor, San Francisco, Cal.

483,688. Photographic Camera. Frederick A. Hetherington, Indianapolis, Ind.

TRADE MARK.

21,787. Photographic Prints. G. F. E. Pearsell.

A TRIFLE SARCASTIC.

HE—A photograph of a handsome man, isn't it!

SHE—Whom is it a likeness of?

HE—Why, of me.

SHE—Indeed! I wouldn't know it by looking at it.

Queries and Answers.

354 MISS N. E.—How many grammes are equal to one ounce of 480 grains?

354 *Answer.*—31.1035 grammes. In commerce an ounce is generally rated as being equal to 30 grammes.

355 SENSITOMETER.—If the sensitiveness of a bromo-iodic wet collodion plate, developed with acid proto-sulphate of iron is considered a standard of sensitiveness, as I am told is done by many American plate manufacturers what would be the possible sensitometer number of a highly sensitive gelatine emulsion plate, say a "Cramer Crown?"

355 *Answer.*—The sensitiveness of the most rapid plates, when compared with that of a wet collodion plate is stated by Dr. Eder to be from 30 to 60, rarely higher.

356 F. B. Y.—Will you kindly explain to me *just* what is meant by transmitted light, used in connection with explanations of toning baths?

356 *Answer.*—Transmitted light is light passing through a diaphanous or transparent body. In our case the paper upon which the print is made. By holding up the print and looking through it the tone will appear quite different from that when it rests in the tray and light is reflected upon it.

357 COERULEA.—How can a pale blue cyanotype be brightened up to a more brilliant color?

357 *Answer.*—Wash the print well, and soak it in a mixture of 1 drachm of solution of perchloride of iron, U. S P., in one quart of water, then wash again. Making the solution too strong will clog up the details.

358 RICHARD P.—How can I find equivalent focus of a Darlot hemispherical lens?

358 *Answer.*—We refer you to the article, "Equivalent Focus," in Mr. Wall's "Dictionary of Photography," Scovill & Adams Company, publishers.

359 T. G. ARTHUR.—(1) If a formula prescribes 120 grammes eikonogen does it signify should it either be crystals or powder. (2) Does the orthochromatic solution advertized by dealers render plates as sensitive to every color as those bought as orthochromatic plates or films?

359 *Answer.*—(1) The powder. (2) The S. P. C. orthochromatic solution will color-sensitize any plate up to the orange ray and slightly into the red. Read Lesson XVII., page 127, "The Photographic Instructor," third edition. Scovill & Adams Co., publishers.

360 F. C. G.—Will you kindly tell me what sort of beer is used in the "beer preservative" process?

360 *Answer.*—The process having been originated in England, we suppose ale will do, or what might be better, "half and half."

It cannot very well be lager, as the beer process of the English has never been much favored by the Teutons.

THE PHOTOGRAPHIC TIMES.

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W. I. LINCOLN ADAMS, Editor.

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THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

PLATINOTYPE MODIFICATIONS.

[This paper, reprinted from *The British Journal of Photography*, refers to the new cold-bath platinotype process of Mr. Willis, spoken of in his recent paper read at the London Camera Club conference.]

The latest modification of the platinotype process is so very simple in practice, that we can perfectly sympathize with several experienced platinotype printers who have remarked, almost in a spirit of complaint, that platinotype has now been made too easy. This feeling on the part of trade printers and others is not difficult to realize when we consider that Mr. Willis, in the latest outcome of his experiments, has not only swept away at a stroke sundry difficulties of working attendant upon the hot-bath process, the popularity and advantages of which remain undiminished by the cold-development, platinotype-in-the-bath paper, which was brought out in 1888, but has also imparted to the sensitive coating a variety of useful properties, which reduce to the minimum the chances of failure arising from imperfect manipulation of the paper. In brief, the new paper, so far as quality of result is concerned, entrusts so little to the skill of the printer, as compared with the hot-bath process, that it may be seriously questioned whether the art of printing from the negative in platinum is capable of undergoing any further simplification at Mr. Willis' hands.

Within the last few weeks we believe experience of the new paper has not only confirmed some of the original claims made on its behalf, but has also admitted of others being urged. For example, Mr. Willis laid down the temperature of development at from 50 to 70 deg. Fahr., but we gather that it has been found practicable to use the bath at a temperature as low as 40 deg. When we add that, at a normal temperature, development takes some thirty seconds or so before starting, and that the developing solution employed need not differ in composition or strength from that used with the hot-bath process, we have indicated the cardinal points of difference from, and resemblance between, the two processes, the details of the preparation of the new sensitive surface, of course, not being available. But nobody's curiosity on this point will, we conceive, outlast a feeling of thanks for Mr. Willis for having relieved the platinotype worker of the spirit lamp, the thermometer, and the iron dish.

As to the qualities of the pictures yielded by the new process, we have satisfied ourselves that in fineness of deposit, in crispness of detail, in vigor and depth of shadow, and in range of tone, the cold-bath paper has the best of the comparison with the hot bath. There is, indeed, a uniform richness of deposit throughout the scale, which was often sought for vainly in prints produced by hot development—the latter sometimes having a flatness and slantiness of tone not always referable to errors in exposure or development. As to the former class of errors, with the new paper Mr. Willis has, we suppose, modified his original ideas. At the outset he recommended hypophosphite of soda as restrainer in over-printing; in practice, however, simple dilution of the developer answers admirably, while, with under-printed proofs, heating the developing solution provides a remedy.

But it is in respect to those properties of the sensitive compound to which we made allusion above, that we think the new paper possesses a peculiar value. It is, so to speak, far less tender to the touch of accidental ill-treatment than the surfaces it has displaced, and on that score it is assured of a freer welcome in the printing-room than they. Air-bubbles, if they form, do not leave any mark behind, and, indeed, to push this properly to a critical extent, the paper may be developed in sections, and when the entire print is finished it presents an appearance of homogeneity inconsistent with the method of its development. Again, accidental finger-marks, when made with the developer in the undeveloped print, do not show after development. The "unbreakability" of the surface is proved by the fact that a fold in the exposed paper leaves after development no visible mark. Finally, but not to exhaust the list, development may be accomplished as easily and as efficiently by a brush as by flotation—a fact which we are inclined to think may, in skilful hands, be taken advantage of in the production of artistic results from inferior negatives not otherwise within reach.

It will be seen that the latest advance in platinotype printing is a distinct and welcome one. That it will tend further to popularize a beautiful and favorite process we have little hesitation in conjecturing. It has left Mr. Willis no more worlds to conquer, but it has earned him the thanks of all lovers of platinotype printing.

Otis C. White, of Worcester, Mass., has issued a very neat and comprehensive catalogue of White's Photographic Specialties in Posing and Lighting for the Studio.

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" " 1890, " 50
The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47..... 25
Orr's Circle of the Sciences, Vol VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper..... 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English). Vols. I. and II. (except No. 18), 1890, 1891.

A few *very* odd numbers of Photographic Notes Daguerreian Journal, Photographic and Fine Art Journal, Magic Lantern Journal, Photographic Herald, etc.

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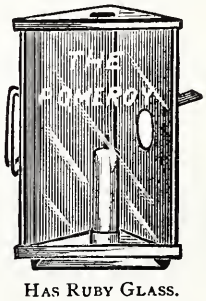
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Para-amidophenol (pure)	100 grains
Sodium sulphite (crystals)	3 ounces
Potassium carbonate	1½ ounces
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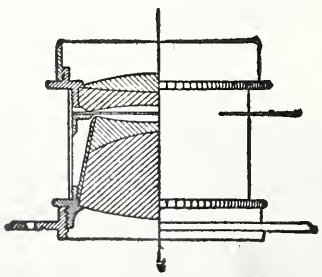
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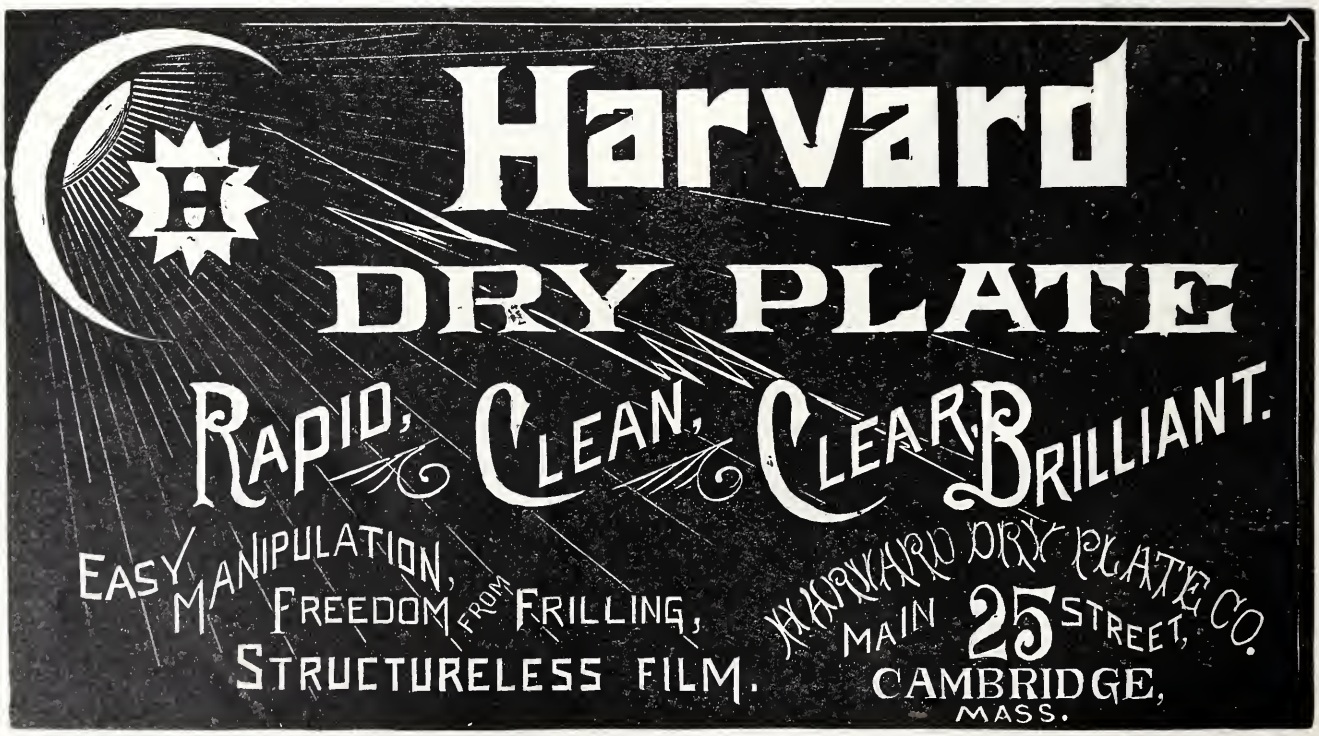
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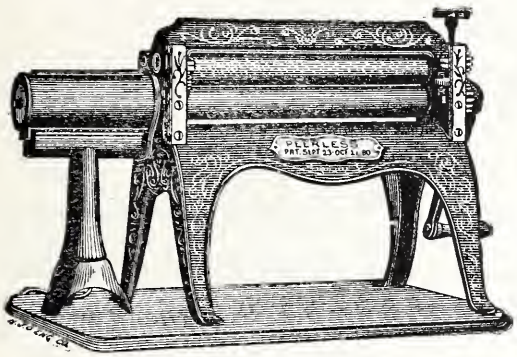
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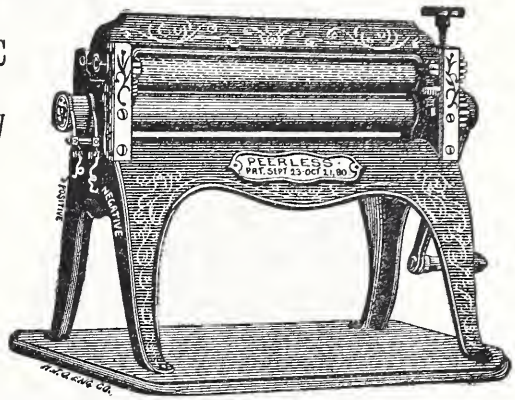


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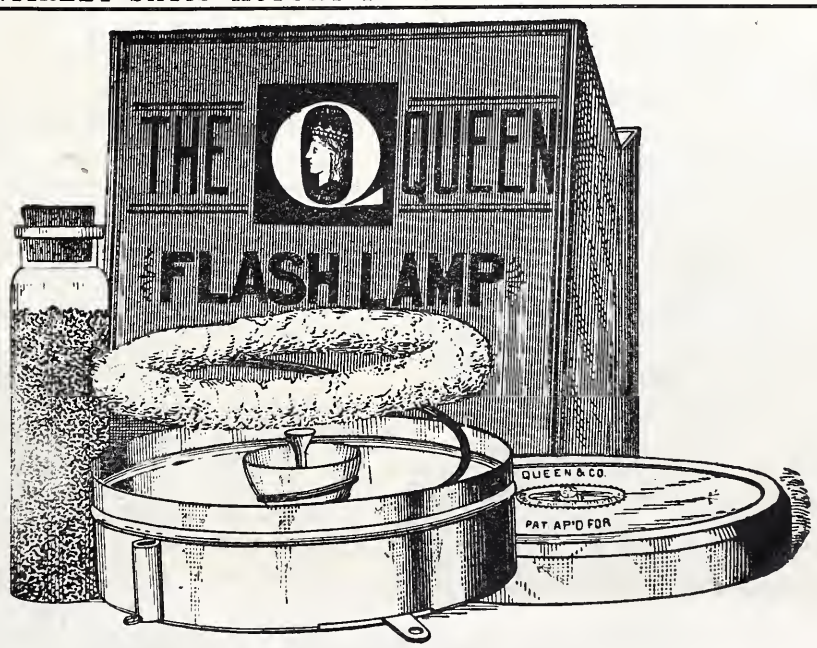
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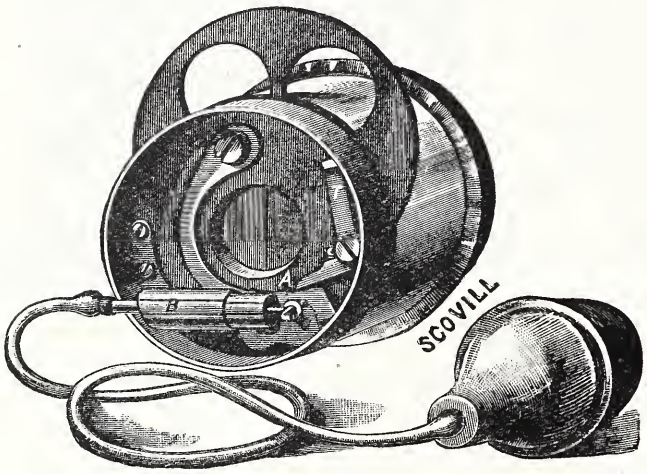
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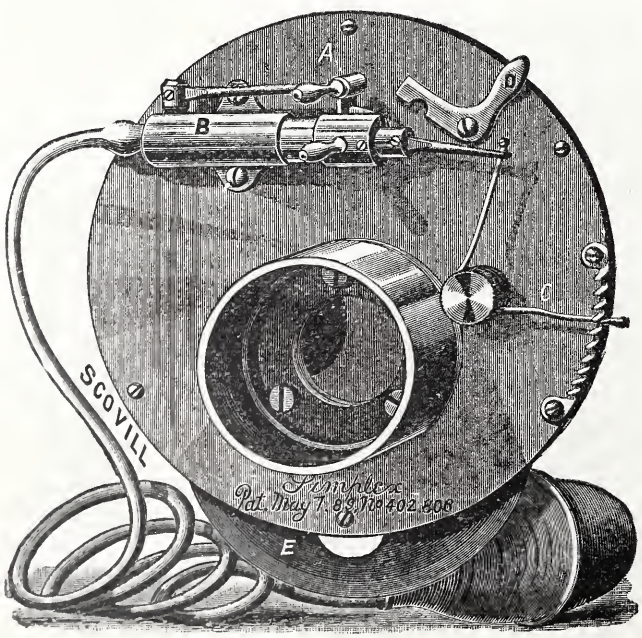
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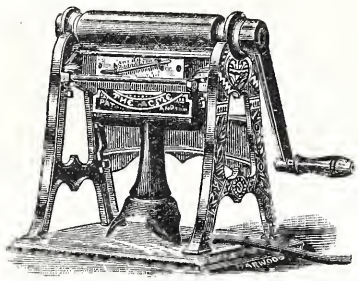
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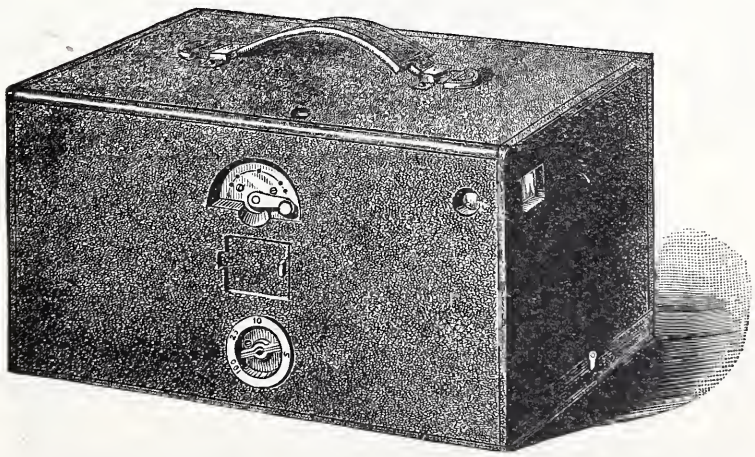
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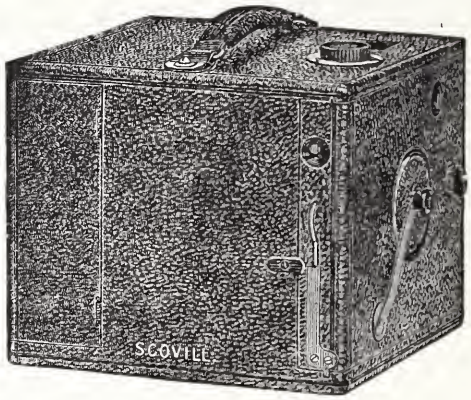
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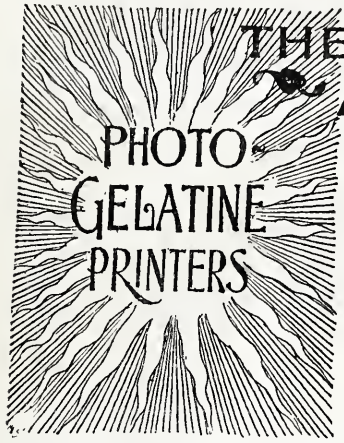


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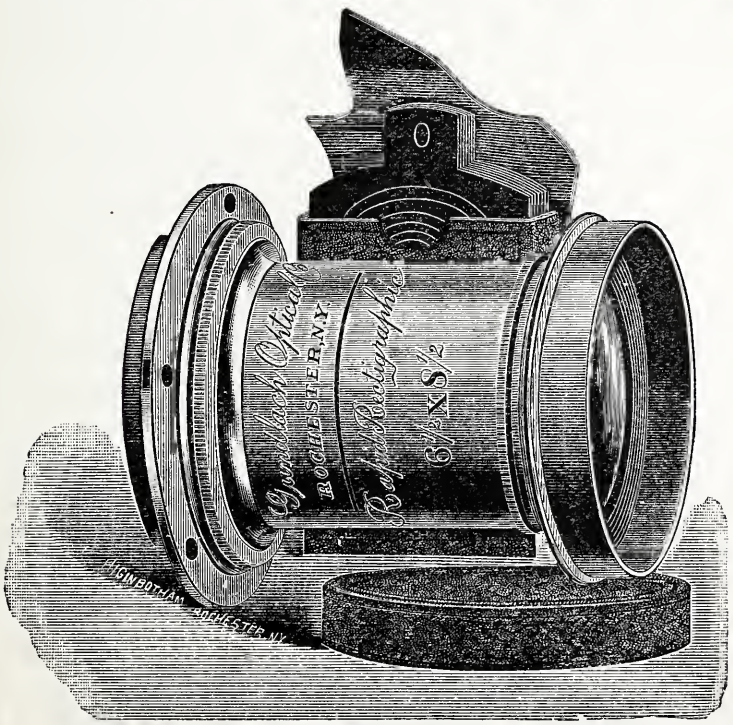
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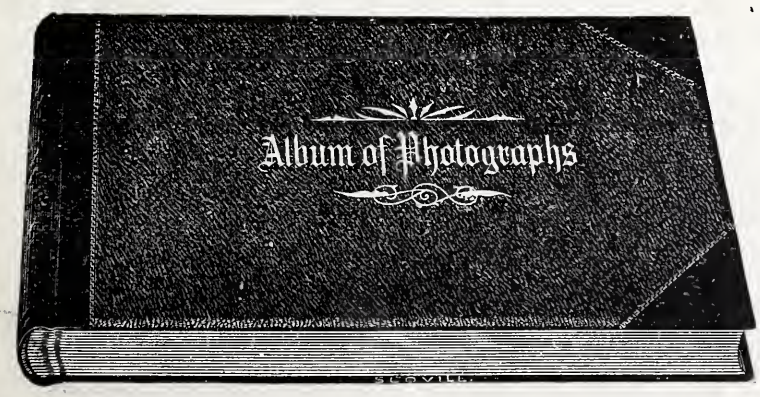
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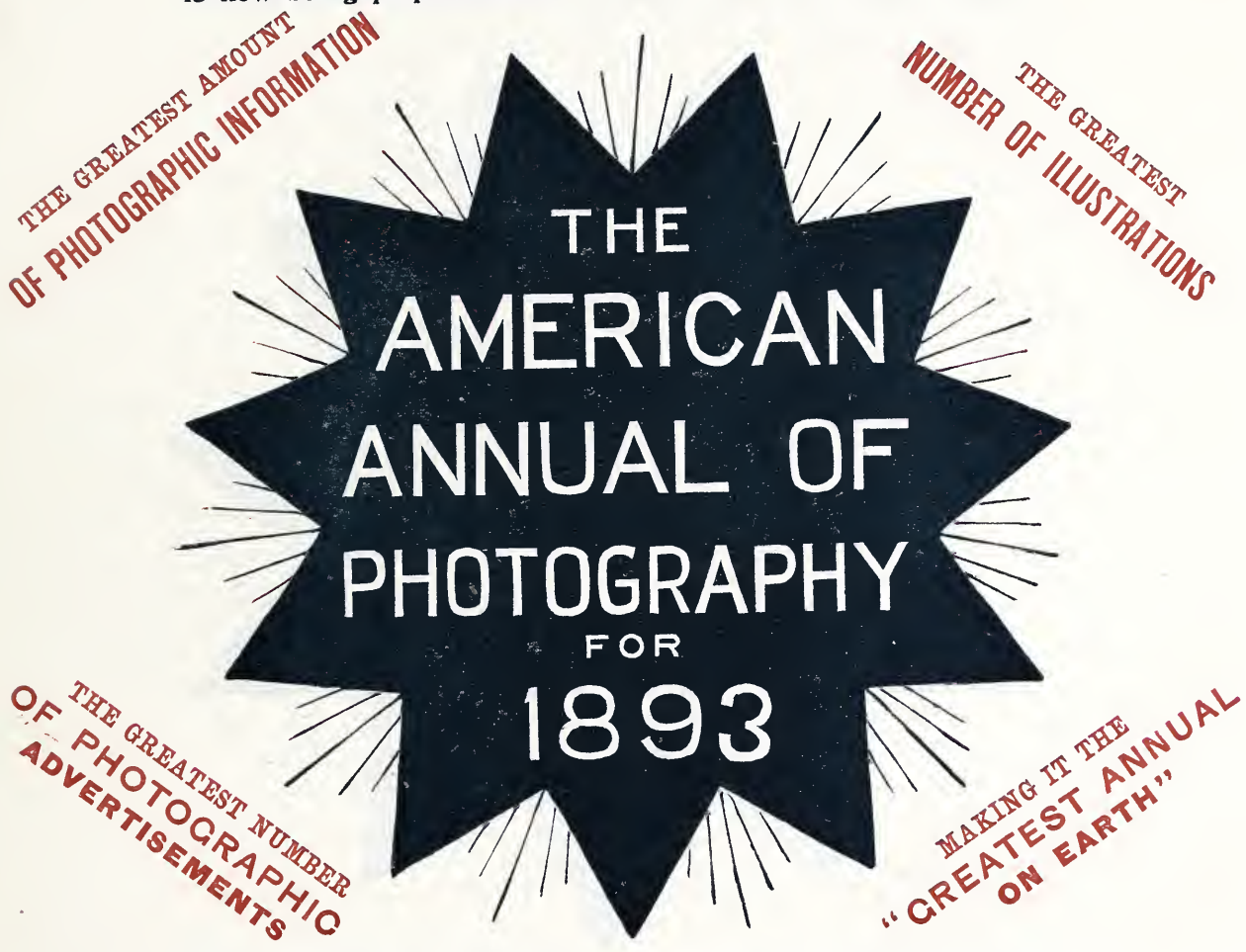
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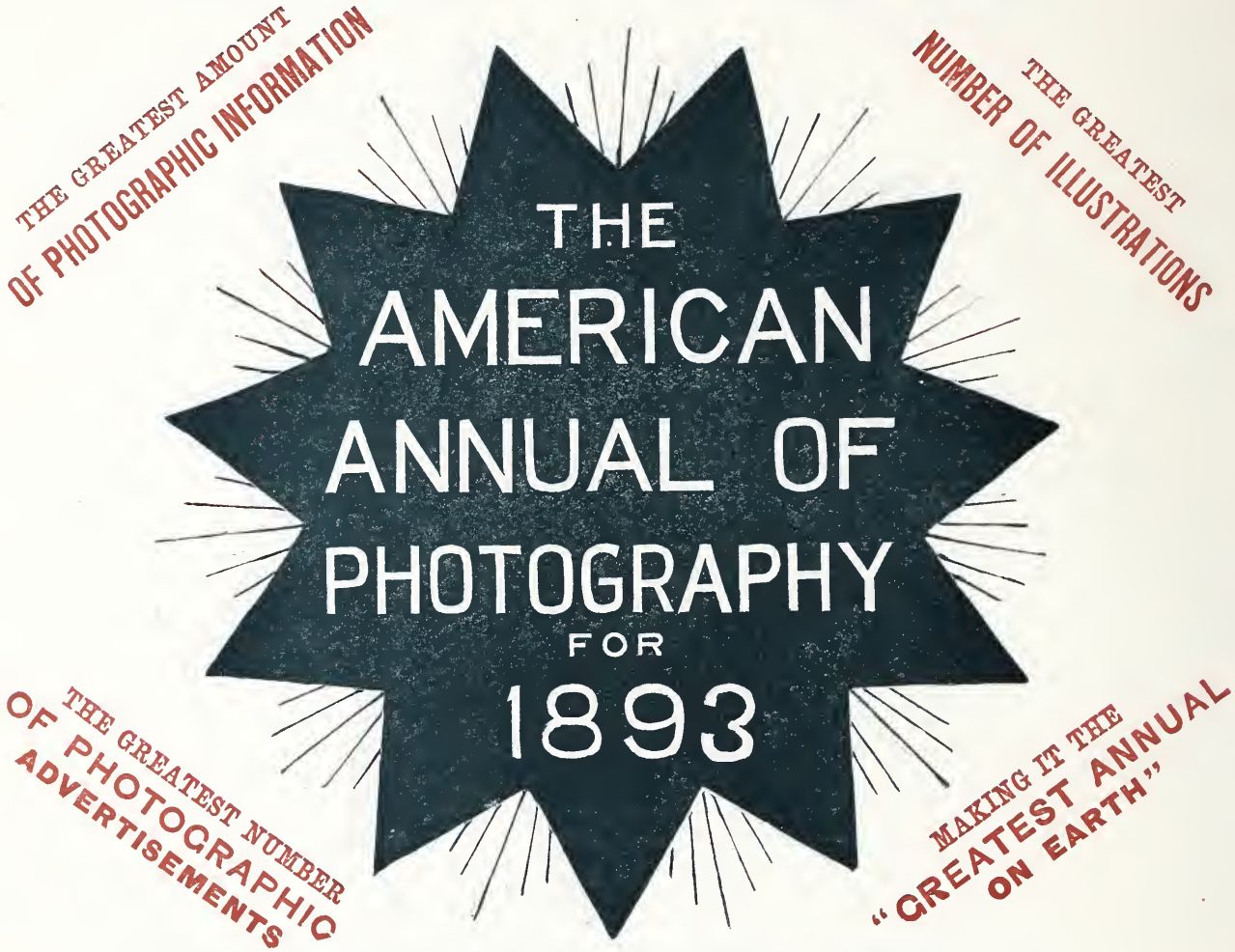
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PORTRAIT OF A GIRL

James L. Breese, Photo.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. OCTOBER 21, 1892. NO. 579.

THE PORTRAIT OF A GIRL.

WE take pleasure in presenting our readers this week with a beautiful Portrait of a Girl, by James L. Breese, member of the New York Camera Club. Simply posed and lighted, and with the plainest of backgrounds, this charming portrait is all the more beautiful and effective. It shows what can be done by a skilful amateur with such opportunities as may be found in a home. It is not only an excellent likeness of the subject, but a most attractive picture at the same time. And that is what every portrait should be.

We congratulate Mr. Breese on his success in this difficult branch of photographic work, and are happy to be able to present it as an example of artistic portrait work by an amateur, to our readers.

NEW METHOD OF DIFFUSING LIGHT IN A PHOTOGRAPHIC GLASSHOUSE.

A VERY ingenious and effective device to modify and control light for photographic and artistic purposes has been patented by Mr. Amasa Flaglor, of San Francisco.

We abstract the following description of it from the patent specification:

One of the most important aids to successful photography is the maintaining of a proper light in the operating room or studio. It is the aim of all photographers to obtain an evenly-diffused reflected light, which after its entrance through the skylight is modified by various arrangements of screens, so as to fall upon the object or person in the proper way to produce the best results as to light and shade. The entrance of the direct rays of the sun into the studio, completely spoils many pictures, which would otherwise be perfectly successful, because such rays, not being perfectly diffused, create sharp and unnatural shadows, which destroy the effect of the picture no matter how carefully and artistically it may be taken and finished. Even if the direct rays of the sun cannot enter the skylight, the reflected rays, entering at all angles, require a very careful arrangement of interior screens to properly diffuse them. The usual means employed in northern latitudes for securing light for photography is an inclined skylight facing as nearly as possible north, so that the direct rays of the sun cannot enter it during the greater part of the day; but in the morning and afternoon in winter and during the entire day in summer it is almost impossible to so arrange the skylight that no direct rays can enter it. It is the custom of photographers, therefore, to provide screens within the studio for the purpose of absorbing as many as possible of these rays. This at the best is not wholly satisfactory; and it is the object of the invention to provide an attachment for a skylight or other opening used to admit light, which may be permanent or not, as desired, and which will intercept and absorb any direct rays from the sun that otherwise would enter the skylight and at the same time will intercept and prevent the admission of all the indirect or reflected rays except those which enter approximately at right angles to the plane of the skylight. The result of this is the production at all times of a pure, soft, and equally-diffused reflected light and a consequent improvement in the quality of the photographs taken.

The apparatus consists, broadly, of a number of cells or tubes open at both ends, arranged relatively to the skylight or other opening for the purpose of intercepting the direct rays of sunlight, and also for the purpose of preventing the admission of all indirect or reflected rays, excepting those which enter the tubes in lines substantially parallel with their walls.

Figure 1 is a perspective view of a skylight provided with the attachment. Fig. 2 is a longitudinal section through a nest of tubes or cells, showing a telescopic adjustment of such tubes or cells.

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A represents an ordinary photographer's skylight, which for the sake of simplicity is indicated as being outside the roof a building, although the general way of constructing skylights for this purpose is to sink them partially in and below the roof. The constructtion and arrangement of the skylight are, however, quite immaterial. Upon the top of the skylight is placed a number of tubes or cells formed from any suitable material substan-

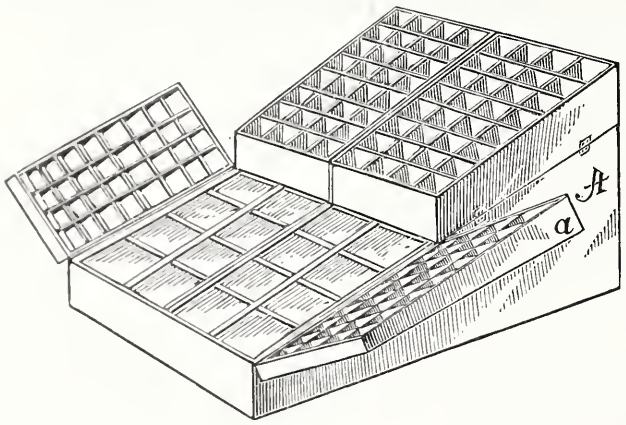


FIG. 1.

tially opaque, such as wood, papier-maché, or light sheet metal. Preferably these cells are constructed with a surrounding frame *a*, so that a single structure is produced which is better adapted to transportation, and any number of such structures may be used, according to the size of the skylight. Thus in Fig. 1 are shown four separate sections of tubes, which are in this case hinged to the skylight-frame. Fig. 2 shows a longitudinal section through a number of these tubes or cells. It is better to form them as shown, gradually decreasing in height from the rear to the front in order that the longer tubes may be at the rear, where the rays of light fall more directly and at a less angle than upon those in front.

This apparatus can be adjusted to all conditions as respects time of day or season of the year by providing a series of sliding telescopic tubes *C*,

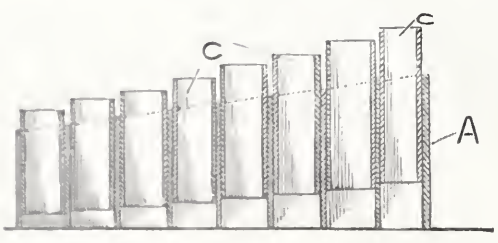


FIG. 2.

which fit within the main tubes, Fig. 2, and which may be pulled out to a greater or less extent, as may be desired.

It is apparent that light from the other tubes or sections around the one specifically illustrated will overlap the squares, and that the pyramids of light will mutually overlap and the reflected rays intermingle, thus diffusing the light generally and evenly and with uniform effect.

The operation of this attachment requires no extended description. It is clear that if the tubes are sufficiently long and the sun is in any position excepting directly overhead none of its direct rays can enter the skylight. Such rays, whether from south, east, or west, will strike the walls of the cells and will be partly absorbed and partly reflected against the opposite wall. It is therefore impossible for any direct rays of the sun to enter the skylight or any portion of it covered by these tubes. In mid-summer, when the sun is high in the heavens, the tubes or cells may be lengthened by pulling out the telescopic slides to as great an extent as may be necessary to prevent any of the direct rays of the sun from passing through such tubes or cells without being absorbed or reflected by their walls.

It is preferable to paint the inside of the tubes black, in order to absorb as many as possible of the rays which strike them. The effect of these tubes is the same with reference to rays of reflected light which ordinarily enter the skylight at all angles. It is evident that only such rays as enter the tubes in line with their walls or approximately at right angles to the plane of the skylight will be admitted to the latter.

It is evident that the apparatus may be applied to windows and sidelights as well as skylights with the same results, and also that it may be placed below or in instead of on the top of the skylight.

It is also clear that the device may be used for the purpose of admitting a more or less brilliant or intense light into the room for special purposes. Thus if the interior of the tubes be polished or they be painted white or some light color the rays of the sun, instead of being absorbed, would be reflected by such walls into the room. At the same time the light would be diffused and the disadvantages produced by the admission of intense direct rays would be entirely obviated.

By taking advantage of the well-known principles of optics that rays of light always travel in straight lines, and that their angle of incidence is equal to their angle of reflection, an attachment can be provided by which to perfectly regulate and control the admission of light at all times. As all the light enters the opening in lines approximately at right angles to it, the management of interior screens is greatly simplified, since no provision need be made for cross-lights entering at different angles. At the same time light may be

admitted at all times through the whole surface of the skylight, and it is no longer necessary to shade or curtain part of it, as must now be done to prevent the admission of direct sun-rays.

PARA-AMIDOPHENOL (RODINAL) AS A DEVELOPER.

As it is my intention in this short article to consider para-amidophenol only in its practical aspect, no reference whatever will be made to its discovery, its chemical composition, or its relationship to other products of the same chemical base or class.

I have been using rodinal since its first demonstration as a developer, and have used it in series of exposures, and compared its action with that of the other standard developers, in order to find its exact value I have had associated with me in this investigation, Mr. Charles Willich, Jr., of New York, who is a most earnest worker and investigator from the scientific amateur's standpoint in all progress in photography.

As it is a cardinal rule in photography, as in all sciences, to follow and work faithfully in one line, our investigation has therefore been entirely with the preparation of para-amidophenol made by the Actien Gesellschaft für Aniline Fabrikation of Berlin.

Professor Charles Ehrmann was the first in America to demonstrate by scientific investigation the value of the new developer; later, Mr. James Stebbins, Jr., explained some highly interesting experiments which he had made with it.

Lange complains of thin negatives in using para-amidophenol. This is no fault of the chemical. The fault exists in the mixture, or in the management of it. The Messrs. Lumière, in an article on the qualities relatively of hydrochinon, eikonogen and para-amidophenol, find decided advantages in favor of the latter. I have used rodinal in all grades of exposure, and of plates, and in our series of experiments we have used lenses from the lowest to the highest in quality.

From my own experience I find rodinal to be the simplest, cleanest, easiest to manipulate and the most readily controllable of all developers at present in use, after an extensive comparison with all the standard developers.

Its simplicity is manifest, as its restrainer is water. Its accelerator, additional rodinal.

With its first use I had recourse to hydrochinon as an after-developer or intensifier, but latterly I found sufficient density can be gained by sufficient development of the plate. Its first claim, that for under-exposed plates its especial efficacy asserted itself, is undoubtedly true, but at the same time an under-exposed plate *is* an under-exposed plate; however, more detail will show with rodinal than with any other developer, and which with proper printing will give satisfactory results.

In order that the manner may be understood in which these experiments have been made, we have used to govern the exposure in time-plates in most instances the Watkins' exposure metre with the following lenses: Gundlach "Star," Crown, Voightlander, Steinheil, Standike, Beck, and Dallmeyer (both R. R. and W. A.). These lenses have also been used in instantaneous exposures.

Most of my "snap-shots" have been made by the "Waterbury Detective," than which my experience teaches me there is no better camera, and in fact has no equal for ordinary work.

In using the "Waterbury Detective" all subjects have been taken with slowest shutter (smaller stop) excepting waterscapes, objects in motion or very strongly lighted subjects, and the latter governed by the ordinary judgment as to color, etc.

Summary, to use rodinal:

1. Use it first 1 to 80, *i.e.*, pour 1 drachm of rodinal into a drachm graduate; pour one-half of this into 5 ounces of water, and if the subject does not appear within about one minute add more rodinal.*

2. Restrain by adding water if the image flashes up too quickly.†

3. Allow plate to remain in the developer until the image is in silhöuette on the back of the plate —this is emphatic—go even further if all detail is not entirely shown.

4. It is not worth while saving the old rodinal, 1 drachm should develop at least six 4 x 5 plates.‡

5. If the rodinal in the original bottle becomes brown in color it does not affect its value.

6. It does not cause the slippery, soapy feeling to the pans characteristic of all developers containing much alkali.

7. It does not get "muddy" as does pyro and other developers.

8. It is the cleanest of all developers.

9. It does not attack the gelatine, nor does it cause "frilling" so freely.

10. Density of negative is equally as great as that obtained by other developers and gives as good results in bromide enlargements.

* The printed directions call for 1 to 30. If there is reason to suspect the plate is over-exposed, use the developer in 1 to 320 and gradually lead up to sufficient strength, following development as stated in paragraph 3.

† I have tried ice as a restrainer and find it of no value, as in an ice-cold solution, 1 to 50, the image appeared in forty-five seconds.

‡ Beach claims that the addition of alkali renews the activity of the developer.

11. No matter how rapid a developer may be I seek to make it of an average strength requiring about ten minutes to develop, and often with rodinal I have taken thirty minutes to develop a plate.

12. Development can be carried further with safety than with any other developer.

13. If your negatives are thin you have not carried development far enough.

14 A reinforced old developer does not work as satisfactorily as a new mixture. There is a retarding element in the old mixture.

15. When the amateur will have acquired sufficient experience he can develop two plates at a time with safety. My associate and myself have developed eight plates at a time together, and lost nothing thereby. Our plates have been from 4 x 5 to 10 x 12 in size.

S. Hemingway, M.D.

PHOTOGRAPHING SPEECH.

Can speech be photographed?

The sounds emitted by the larynx are so complex, modified as they are by the tongue, lips, teeth and cavity of the mouth, we answer no, if it is a question of reproducing the two parts constituting what is called speech. It is phonographed by the well-known instrument; it is the movement of the organs of speech that is photographed. If it is useful to phonograph the first for the greater portion of mankind, for another portion, the deaf and dumb, happily very small, who merit all our compassion, it is indispensible to photograph the other. It is by our facial expression that the unfortunates read what we say; they teach them to translate into intelligible phrases the movements, although rapid, that are made by the tongue, lips, and the whole physiognomy when we speak. They are taught to repeat these movements and to produce articulate sounds of speech that we understand, which they do not hear.

At the last examination held at the Hotel de Ville, Paris, the pupils of the National Deaf and Dumb School were submitted to an oral examination. Questions were read from the face of the examiner, they responded by making the movements that had been taught them and they were understood.

How to teach these movements without showing them? Patient observers have written books upon this subject, they have described after nature the different positions of the tongue and lips. But how much truer, more precise and more complete is a photograph of these same movements, to which is added the play of all the muscles of the face.

Sunlight is used concentrated upon the face of the patient. The movements of his mouth seem much exaggerated, and the loving phrase *je vous aime* (I love you), that he pronounces seems ridiculous when we see the corresponding grimaces, it is like photographing men and animals in motion, where certain attitudes are surprising because our eyes are not accustomed to distinguish them; they are of such short duration that photography renders them visible by fixing them.

The photographic apparatus is arranged in such a way that sixteen images can be taken per second. A very ingenious mechanism, impossible to explain here, enables them to reduce the *pose* to 1-1200 to 1-1500 of a second. We can understand then by this that the movements are taken on the wing.

Images taken in this manner are put into the *zootrope*, a well-known apparatus to be found in the toy stores, we can see the face become animated in a most natural way. This is no theory, the apparatus is constructed and operates perfectly.

Allen C. Knapp.

FERROTYPES.

The ferrotype is a positive on thin varnished iron plates, and as far as I am aware is a success only by the wet process, and is but little used since the advent of dry plates and aristo paper.

Amateurs would find themselves in deep water should they attempt to make ferrotypes without a previous course of instruction; and yet nothing is easier for an old timer. The permanency of the ferrotype when well made has never been questioned. I have some in my possession that have been made nearly thirty years, and yet they are as bright and fresh as ever; while photographs taken at the same time and kept in the same album have almost faded beyond recognition. I am not writing these articles thinking to revive the process again, but for the benefit of those still making them. They are generally made four at a time on 5 x 7 plates with four ¼ Gem lenses. It is necessary that the four lenses be of the same focus, and that they be screwed in a brass plate that is fast to the head block of the camera. The lenses should be provided with central stops for use in taking standing figures and groups. Get some jeweller to saw the tubes about one-third in two in the centre. Then any tinsmith can make the stops from thin sheet copper or brass, with openings the required size. The stops can be blackened by holding them

in the fumes of burning sulphur. It requires double the light and four times the length of exposure to make a ferrotype that it does to make a negative on a dry plate. Hence it is useless to think of taking groups of children or animals in motion on ferrotype plates.

The plates are generally bought in sheets 10 x 14 and are cut to the required size by the photographer—one large sheet making four 5 x 7s. It does not pay to use a plate the second time. They are too cheap to run the risk of spoiling the silver bath.

J. R. Swain.

(*To be continued.*)

THE HELIOCHROMOSCOPE.

[Presented at meeting of the Photographic Society of Philadelphia.]

It was in 1888 that I first described and demonstrated, at the Franklin Institute, a method of reproducing the natural colors by photography, which differed in certain vitally important particulars from somewhat similar processes which had already been carried out by Cros and Du Hauron in Paris, Albert in Munich, Bierstadt in New York, and others. I succeeded in reproducing the natural colors in landscapes and various objects with a degree of accuracy which I have good reason to believe had never before been approached by any method without the intervention of the artist's brush. The precedure was, however, too complicated and difficult for profitable commercial application, and comparatively few specimens were made.

I now present to your notice devices which so greatly simplify the operation of the process as to make it quite possible to place it in the hands of even "press-the-button" class of amateur photographers, and yet yield results that are no more defective in color-rendering than the ordinary photograph is in the rendering of monochrome light and shade.

The first of these devices is a camera attachment by means of which the three pictures representing the effect upon the three fundamental color-sensations are made by a single exposure on a single sensitive plate, and from a single point of view. The device as now perfected is surprisingly simple, being comprised in a small box which may be attached to the front board of an ordinary camera. The division of the light-ray is effected by transparent mirrors, as in some of my earlier cameras, but in such a manner as to dispose the images symmetrically on a single plane, without altering the position of the camera in relation to the object.

The second device, which I call a heliochromoscope, contains the same arrangement of mirrors, turned about so as to serve to recombine the three photographs in such a manner that the photographic color-record is translated into color again as readily as the sound-record in the phonogram is translated into sound in the phonograph.

The most important advantage of this device is that it may be used at any time, at a minute's notice, like the stereoscope; and, as almost everybody may possess one, it is competent to make the realization of color-photography a household affair. It also most completely fulfills the theoretical conditions of success than either the production of color-prints or lantern projections, and produces an illusion in nature more perfect than would be possible with even an absolutely perfect color-print on paper, because the picture is seen without surface reflections or distracting surroundings.

I claim for this system of color-photography that it is perfectly rational and scientific, and a true solution of the problem of reproducing the natural colors in a photographic picture. This claim meets with a good deal of opposition in the minds of some people, whose mental attitude is a source of wonder to me, because the same sort of objections that are made to the triple photograph would apply to the stereogram and the phonogram. One is an automatic record of color, another of binocular vision, and another of sound; each must be placed in a special device in order to reproduce that which it has recorded—the triple photograph or chomogram into the heliochromoscope, the stereogram into the stereoscope, and the phonogram into the phonograph. I do not remember ever to have heard the stereogram denounced because it is not a single print with embossed relief, or the phonogram because it has no lungs.

Some even go so far as to deny that this can properly be termed color-photography at all, although the same individuals are in the habit of calling pictures that cannot be made to show colors "orthochromatic" or correct-color photographs. But the most extreme illustration of this peculiar attitude of the mind that I have seen is the assertion of one who, if I am not mistaken, has aspired to be the historian of photography, that this is merely "looking at ordinary photographs through bits of colored glass!" To be consistent, this writer should describe the stereogram as "two ordinary photographs, mounted on the same card," and the phonogram as a "wax cylinder having a roughened surface like an ordinary file." I believe he did recently write a history of photography, with "an

introduction to its latest developments," without once mentioning color-sensitive plates.

I speak of this kind of criticism because it comes from men whose writings are in demand, and proves the existence of a deep-seated prejudice, which I have encountered in the development of other applications of photography, and which must be combated in order to overcome it. I will give an illustration: When, in 1880, I succeeded in realizing a mechanically accurate and practical method of half-tone block-making, I could find only one engraver who believed there was a future for processes that rendered the shading in equally spaced graduated lines and cross-lines. Engravers, printers, publishers and photographers were agreed that if a block be made up of lines, those lines must follow the contours of the object depicted, as in the conventional wood engraving. Since that could not be done, a grain, similar to the well-known lithographic grain, must be substituted for the line-tint. I declared that the objection to a regularly lined tint was a prejudice, stuck to it, and already, within twelve years, plates having that same lined tint have come into such extensive use as to replace millions of dollars' worth of wood engravings. They are used in illustrating books and periodicals of the highest class, and the advantages of the mechanical lined tint are such that it threatens even to invade the domain of photogravure. Mr. Louis Levy exhibited such results at the last monthly meeting of the Franklin Institute, and I myself applied for a patent on a printing plate of this character more than a year ago, having first experimentally demonstrated certain important advantages which they can be made to possess.

We did not make half-tone printing plates of the kind that engravers and printers and publishers thought they must have, but they have concluded to take what we did make, and are taking them more and more every year.

We have not made photographs in the natural colors of exactly the kind that people have been looking for, and there is good reason to doubt if such a result will ever be accomplished; but we have actually realized, by a process almost as simple as stereoscopic photography, results better that can even be hoped for in color-prints, and so perfect that they must ever represent the standard which results by any other method must be made to approach in order to be acceptable. A good many people seem to think that this is not what they want; but I have quite as much faith in the future of the heliochromoscope as I ever had in the future of half-tone block-making in line. It has been a revelation to me, and I believe it will be to the whole world.

I met a professional artist in London, a clever painter of both portraits and landscapes, who spent what seemed to me a very long time studying a bouquet of flowers reproduced in the heliochromoscope, and left it only to return to it again and again, as if it fascinated him. At last a friend asked him for an expression of opinion upon the merits of the device. After some hesitation, he said that he had attended one of my lectures at the Royal Institution, hoping and expecting to go away and report the failure of another attempt to reproduce the natural colors by photography. He had not been able to do so, but was forced to confess that color-photography is a fact. The demonstration was conclusive to him. The heliochromoscope will have no better friends than the artists, for whom it will not only reproduce Nature, but the masterpieces of art as well, in such manner that they can be studied in far-distant lands almost as well as in the galleries where they repose.

In the far West, I met the representative of a large New York firm of importers of Oriental rugs. He assured me that he was ready to pay a hundred dollars out of his own pocket for a duplicate of the heliochromoscope that I showed him, with a set of photographs of the rugs that he carried about with him only to show their colors. It would save his firm a good deal of money that went in expensive sample rugs, and in cost of extra baggage, and it would save him a great deal of trouble. A professional house-decorator spoke much to the same effect. Evidently, the heliochromoscope will have many fields of usefulness—so many, perhaps, that its function as a source of drawing-room entertainment, for which alone many have supposed it to be adapted, will prove of secondary importance. But I shall be greatly surprised if, even for the latter purpose, it does not become more popular than the stereoscope ever was, although it is necessarily a much more expensive instrument.

F. E. Ives.

The Maddock Memorial Fund.—We have received from Mr. Charles E. Hayes, Treasurer of the Buffalo Camera Club, a contribution of £2 ($10) for the Maddock Memorial Fund. This amount was contributed at a recent meeting of the Club, by a resolution of the members present.

The fund is not yet closed, though a goodly sum has already been contributed. We shall be pleased to acknowledge and forward any further contributions which may be sent to this office.

SIMPLICITY IN PORTRAITURE.

[Specially translated for THE PHOTOGRAPHIC TIMES from *Photo Club de Paris.*]

"OH, young man, you could not make her beautiful, so you made her rich!"

This exclamation of Apelles to one of his pupils who had painted Helen adorned with a great quantity of jewels, does it not often come to your mind or on your lips before a great number of portraits? I mean veritable portraits, representing the model at least to the knees and not those simple heads on a ground termed vignettes, which does not require a great artistic effort, aside from the lighting of the head. I admit that this is worth to be taken into account. However, when it only applies to the head, it is singularly simplified. Other is the effort of the portraitist who not only has to study the lighting but also the position of the whole, the holding of the hands, the arrangement of the draperies, the choice of the accessories. Hence is it in three-quarter portraits that all his science develops itself, that all his art appears. It is a certain criterium of his æsthetic knowledge.

What should be a good portrait? The resemblance of a person in the same time as a page of the contemporary history. That is what logic indicates and what proves the study of the great masters.

To cite three names only, but three names that one cannot forget, let us cite Titian, L. de Vinci and Holbein.

Titian generally does not much have recourse to the details. The chiaro obscuro attracts him, and of it he makes a great use. He sharply accentuates his lights and his shadows. To judge well his portraits, they should be seen at a certain distance. Then they appear in a powerful relief, and seem to come out from the frame. This particularity of the portraits of Titian constitutes one of the characteristics of the master. Characteristic so striking that it at once appeared to his contemporaries, who pointing it out to us, as it appears by this letter of Mary of Hungary sent to Mary Tudor *à propos* of the portrait of Philip II: "*Si est-ce qu'elle* (the queen of England) *verra assez par icelle sa ressemblance, la voyant a son jour et de loin, comme sont toutes les peintures dudict Titien que de près ne se recogniossent.*"*

Of the details Leonardo da Vinci still less preoccupies himself. What he searches, it is the envelopment of the person in a sort of mystic shadow well done to soften the reliefs, bend the outlines and harmonize the whole. For him the eye is all. Life is there. Notwithstanding the softening, the bending, the harmony of the surrounding shadow, that life shines in the look with such an intensity that the portrait seems to live in reality. Ten minutes of contemplation and the living person is evoked, and comes out from his frame. See La Joconda.

As to Holbein, he proceeds by a very frank opposition of a bright light with an obscure shadow. His fine portrait of Erasmus in the Louvre is a striking example of his manner.

Thus, by considering these three masters, who resume pretty well the art of the portrait in the sixteenth century, we are in presence of a very great sparing of details and of the relative system of lighting. It is not to these masters that one could say: "You could not make her beautiful, you made her rich."

Hence, on one side, the bright opposition of light and shade; on the other, a shining light in the eye with a mysterious envelopment of the ensemble. In photography this to me seems preferable to that. At least until the day we will have the chromophotography at our disposal. From the very fact that photography can only dispose of white and black, it still more accentuates the contrasts of shade and light, and one should have a great science in the development and the judicious choice of a developer, to preserve the oppositions without harshness.* That science can be acquired, that choice can be made.

A mixture of eikonogen and of pyrogallol, for example. However the portraits with great oppositions preserve that particularity pointed out when speaking of Titian, that they should be viewed in their light and from a distance. This last exigency does not well agree with our photo copies on account of their generally small proportions. On the contrary, to well appreciate the details we look at them from a short distance. Hence it is advisable for the lighting to adopt the manner of Leonardo da Vinci.

I will no longer speak on this question. Alone it requires to be treated, in a whole article, and it is not it which makes the subject of this one. However, I thought it was well to say a few words on this subject. One could not write on portraiture without speaking of the lighting, though incidentally. Outside of it what is striking in the masters I have cited, is the simplicity, due to a thorough knowledge of the art of the ornament and of the dress.

* She will see the resemblance in viewing it (the portrait) in a good light and from a distance, as are all the pictures of the said Titian, which near by are not recognized.

* See "The Photographic Image; a Treatise of the Development," by P. C. Duchochois.

About what concerns the clearness of the motive it may, of course, be good, utile, necessary of giving a place of some importance to the accessories, of causing the draperies, the furniture, the costume to concourse to the ornament of the portrait. The photographer can in this way give entire liberty to his fancy, to his taste in the search of these ornaments. However, here occurs the capital question of simplicity. If the great painters in general have admitted and practised this simplicity, there is in the history of portraiture an epoch when it was entirely repudiated. I have named the epoch of Louis XIV. All the artists of that time considered as a veritable æsthetic to represent their model surrounded by a thousand objects intended to well represent, according to them, his habitudes, his daily or preferred occupations, the society in which he was moving, etc. I could not contest that by this manner works of a remarkable beauty had been produced in France; example the painting of Largillière and those of Rigaud. One remains bewildered before this accumulation of draperies, this surcharge of accessories, upon which light plays beautifully. However, that is, after all, only a manner of showing the skill of the artist. The photographer also can produce these effects by a well-understood management of the blinds and screens in his studio.*

Whatever it may be, I beg pardon to the names of the artists of the century of Louis XIV., but I am not of their opinion. Oh! not at all. However excellent can be their method, it is often bad. It is always so when it is pushed to the extreme, and the extreme is generally the inevitable abyss of this manner of conceiving a portrait. However, they never have made a school, and the impulse by them given has been soon reproved.

After all this adorned (historic) portrait is blamable. To show the clearness and the verity of the motive, a true portraitist should not want to have recourse to these artifices; they should be left to genre painting. If, for any cause, he thinks proper to admit them, it should be on the express condition to leave the accessories in a secondary place. And I should not too much object again to that general tendency of placing everything in focus, and of employing for portraits lenses having a great depth in their focal surface. The model alone should be in focus. The want of sharpness of the accessories will contribute to place the portrait itself in relief. What of that the mathematical exactness of the furniture, of the tapestries and every small object which surround it. It suffices that they be there, since it has been thought necessary to represent them in order to show the habitudes of the model, his preferred occupations, the society into which he lives. But this sufficiency should not imply the same verity of execution as that required by the model, whom we desire to faithfully represent, and want to make a portrait. He alone must attract and retain the first vision. If the accessories must concourse to the interpretations it suffices that their form be indicated. They are but explicative notes, those which are placed at the end of the book in small types.

A portrait, I have said, should be the resemblance of a person and at the same time a page of contemporary history. How can these two qualities be allied with the simplicity?

At first it may seem strange that it may be a question of resemblance in a photographic portrait. The lines of the model can give, it is thought, nothing else than a good likeness. However, a perfect resemblance is in the whole pretty rare. This can be constated quite easily by examining a series of portraits from acquainted persons. One will have then to look at many of them before seeing one really life-like. This provenes from two causes, first from the mania that one thinks to be obliged of correcting the image by a retouch, often made at random, which effaces the wrinkles and the defects of the skin; and, on the other hand, the want of art in the composition of the portrait, which leads one to take the sharpest possible focus to render all the details of the face, the hair, the dress, etc., without in the least taking into consideration the moral side of the subject. Without it a portrait can never be a good likeness. The arrangement, the lighting of the model, as well as the choice of the accessories, should be subordinated to it. A portrait should represent the *whole* man and not a part of that man figured by the outlines of his physical nature. It is a difficult task for a painter, more difficult still it is for a sculptor who does not possess the resources of the colors and is forcibly obliged to limit the number and the choice of the accessories. As to the photographer, how often have I not been told that this difficulty was for him an impossibility.

"Photography represents the features, but the physiognomy, never. It is why a photographic portrait, free from retouches, can not be really resembling!" This is a commonplace saying which is considered as an axiom. Well! those who by repeating it helps to propagate it, show their ignorance of the photographic process. And if they are photographers they do not know all the resources of their art. In the time when we were obliged to expose for many seconds, a minute, I

* See our work, "The Lighting of Photographic Studios."

recognize that it was a great difficulty of seizing the physiognomy. It is, in fact, very changeable even in the most placid faces.

To-day, it is different. With a Zeiss anastigmat, 1 : 6, 3, for example, stopped with a diaphragm 1 : 9, two or three seconds of exposure suffice in a well-lighted room * to obtain a soft picture. This nearly corresponds to the instantaneity if one operate in open air and to a very short exposure time in a good studio.† Hence, the photographer can perfectly seize the moral verity of the model, no matter how fugitive it is. This verity added to the purely picturesque qualities of the physical nature give the expression of the ensemble, in a word, the resemblance. Now, before all, the resemblance in a portrait should be such that *a priori*, any one not knowing the original, can say : "Here is a good, resembling portrait."

By the by, let us remark that the French school of portrait has at every epoch of its history shown a singular proof of penetration, of deep and savant intelligence of the physiognomy and character of the model. It is what makes it remarkable. The last comers in this school—the photographers—should not do less than their elders; moreover, that the processes of their art permit them to reproduce the persons in the motion of life, in the transport of passion even, and in every case to fix the look which reflects the soul and remains the primordial component of the expression in a portrait.

Hence, however simple the decoration, the portrait can and should be resembling by the representation of the moral side, by the life of the vision.

It remains to see how it can, by still remaining simple, fulfill the second condition of the programme, that is, to represent a page of the contemporary history. At first sight this seems difficult, and one is tempted to admit the tendencies of the portraitists of the century of Louis XIV. By examining the question a little more closely this difficulty disappears. Are not the constant variations of fashion sufficient to indicate the date of the work in, however, keeping the simplicity which claims and requires the art. They are more than sufficient when we have to deal with the portrait of a lady. From one year to another—I was going to say, from one season to another—the coiffure, the dress change almost completely. The fashion seems to less vary for men. However, let us look only at the head of a man either in the First Empire, the Restoration, the reign of Louis Philippe, the Second Empire, and now, and we will see that they totally differ only by the arrangement of the coiffure, of the cutting of the beard. Without any accessories, they constitute, each in itself, a page in contemporary history.

There is no necessity of accumulating the accessories, and to take much notice of the ornament, or to multiply the jewels. We can very well avoid the criticism made two thousand years ago by Apelles. Let us try to make true and beautiful and still to make simple. We can very well conciliate this simplicity with the art of ornaments. I will, in completing this article in a future period, again speak on this particular case, by searching what should be *the ornament in the portrait.*

Frédéric Dillaye.

* A room with a window 1½ by 2½ meters, the model at 1 meter from the window and a well-conducted development

† In a photo studio and the ordinary 8 x 10 portrait lens, full opening, the exposure time is about one-tenth of one second.—Ed.

NEW PHOTO-LITHOGRAPHIC PROCESS.

In this process a photo-lithographic transfer paper is used that can be purchased ready prepared; the well-known Husnik paper answers perfectly. It is sensitized in a solution of bichromate, and then printed exactly as described in the instructions given with the paper by the manufacturers. After printing, the print is placed in the dark-room in a solution of chloroform until it becomes sufficiently saturated with it, when it should be placed upon a clean glass plate and coated with a sensitive asphaltum solution. When dry, the print is placed for about ten minutes in hot water, and is then developed on the glass plate by circular rubbing with a pad of cotton, which should be continued until every line of the image appears clear and distinct. The print is then rinsed with cold water, soaked for about five minutes in a solution of chrome alum (1 part in 100 parts water) and again washed. Finally the print is gummed. In this state it may be kept for months before it is used to make a transfer. Before use the print should be freed from the gum layer by means of water, and the excess of water removed by gently dabbing the print with a sponge. Whilst the print is soaked in the water bath, a small quantity of the following photo-lithographic ink should be spread, by means of a glue roller, over an inking slab:

Transfer ink	100 parts
Syrian asphalt	50 parts
Venetian turpentine	50 parts
Boiled in French turpentine oil	200 parts

Finally, after the ink has been removed from the fire, 100 parts of benzol should be added to it with constant stirring. With this ink, the print,

whilst it is still wet, is rolled up until an even film of ink is left upon the paper, through which the image can be seen distinctly. When the print is inked up, a transfer is made from it in the usual manner. This method has the advantage that a single print is sufficient, which may be kept for months, and which also then produces any number of transfers of great brilliancy.

C. Fleck.

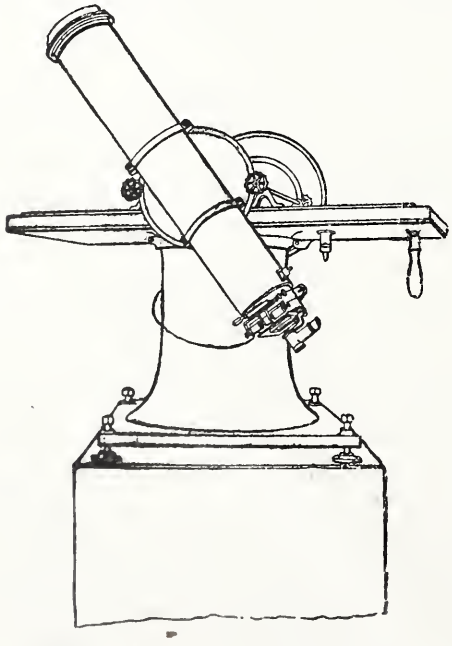
LONGITUDE AND LATITUDE DETECTED BY PHOTOGRAPHY.

NEW INSTRUMENT FOR DETERMINING THE CO-ORDINATES OF LOCALITIES ON THE SURFACE OF THE EARTH.

[Special Correspondence of the *New York Herald*.]

WASHINGTON, D. C, October 11, 1892.—The young astronomer, Professor George A. Fargis, of Georgetown University, who some time ago invented the photo-chronograph, for measuring star transits, has made a novel, and, it is claimed, very valuable application of his discovery. By it he has also been able to determine latitude and longitude. The Rev. J. G. Hagen, S. J., the director-in-chief of the Georgetown Observatory, says on the subject:

"The determination of latitudes, and in particular of their periodic variations, by means of photography has repeatedly been pronounced feasible and highly desirable —*e. g.*, in the *Astronomische Nachrichten* (No. 2982 and No. 3015, page 241)—yet a practical method which would



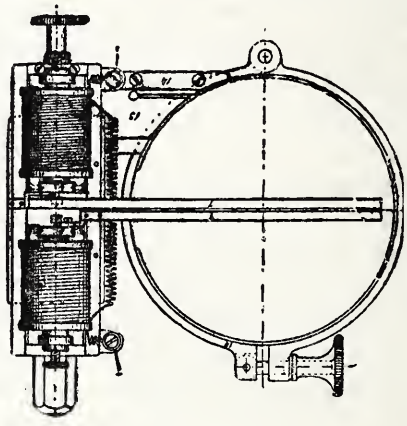
THE FLOATING ZENITH TELESCOPE.

afford all the advantages of the usual methods, and at the same time put the whole record graphically on a sensitive plate, has never been suggested.

A PROBLEM SOLVED.

"The problem has been kept in mind at this observatory for several years back, and it was a settled conclusion from the beginning that the spirit-level should be replaced by mercury. Two ways of doing so were possible, which may be called the reflecting and the floating principles. Neither of them is new. The former is in constant use in connection with the meridian circle and forms an essential part of Airy's Zenith Tube (Greenwich observations in the year 1854, Appendix I.), the latter has been applied, for the first time, it would seem, by Captain Kater, in his floating collimators (Pail. Trans., 1825, p. 153, and 1828, p. 257), and recently by Dr. Chandler, in his Almucantar (Annals of Harvard College Observatory, vol. xvii., 1887).

"Early in 1891 the plan was so far advanced that the floating principle was adopted. Yet it remained incomplete until Professor G. A. Fargis, S. J., suggested the application of the photochronograph. In the first week of August, 1891, the order was given for the new instrument. Its construction was not entrusted to one of the known instrument makers, as the advisability of subsequent changes arising from experience was foreseen. The portability of the instrument did not enter



THE LATITUDE PHOTOCHRONOGRAPH.

into the plan proposed, and no attempts were made to secure lightness or gracefulness of make.

"Two parts of the instrument, however, had to be perfect from the beginning—the objective and photochronograph. The photochronograph used in latitude work differs in several respects from the one used in transit work. Both are the invention of Professor Fargis. It will not be too much to say then that the photochronograph in its various shapes has succeeded in solving the double problem of determining by way of photography the co-ordinates of observations—latitude and longitude."

WHAT THE PHOTOCHRONOGRAPH IS.

The photochronograph used for latitude work consists of two simple photochronographs symmetrically placed. One of the occulting bars is placed a little behind the other, so as to permit them to overlap without touching when the current is made, thus completely cutting off the stars from the sensitive plate. The instrument essentially consists of a photographic telescope attached to a float placed in masonry.

Professor Fargis himself says:—

"It is desirable to state here that the results are not considered final, because the declinations will have to be carefully scrutinized when the material is more abundant and because of the defective construction of a microscope.

"Two conclusions, however, may be drawn from these results. First, that the photographic method is as applic-

able to latitude determinations as it is to those of longitude. In both cases fewer stars, indeed, can be observed in a given time than by the usual method but this disadvantage seems amply compensated by the accuracy of the single results.

"The intention is to make this observatory a permanent station for studying the periodic variations of the Pole. A second permanent latitude station is being erected at Manila, in the Philippine Islands. It will be furnished with a floating zenith telescope and latitude photochronograph like those here described. The future director of that station, Father Joseph Algué, is now at this observatory with the view of familiarizing himself with this method. Since Manila is almost opposite Washington in longitude, these two stations seem to be well adapted for controlling the periodic variations of the Pole by a uniform method, in a direction almost perpendicular to the meridians of Berlin and Honolulu, where simultaneous observations are carried on at present."

A NEW FORMULA FOR THE DUSTING-ON PROCESS.

Comparatively few modern photographers have any practical knowledge of what is known as the "dusting-on process"; and, though it is frequently mentioned, it is very rarely that any attempt is made to arrive at an explanation of its meaning and uses. And yet it is a process that, more almost than any other of those not strictly falling within the lines of negative and print production as generally understood, lends itself to many purposes.

It is not so much in the direction of the production of vitrified enamels, enlargements, and reproductions on a large scale, and other similar uses to which it was originally put, that we may look for its adoption at the present day, but rather to the reproduction and modification of defective negatives, the introduction of skies and clouds, the production of opals, and even of transparencies of large size for decorative purposes, to all of which uses it is peculiarly adapted.

Although many formulas have been published for the sensitizing liquid, none have proved hitherto entirely satisfactory, except in the most careful hands. Of the various ingredients—gum, gelatine, sugar, glucose, honey, glycerine—some are more manageable than others. The best formulas are the simplest, and, if it were possible to work with only a single organic element, that method would be the one I should adopt. Unfortunately, however, this is not the case, as there are varying conditions, to satisfy which necessitate the employment of different substances and not infrequently the alteration of their proportions.

Gum arabic has usually been the favorite substance employed to give body to the film, but it is inclined to present difficulties in coating the glass, and also to blister in the operations subsequent to development. Still it is better than gelatine, which either does not take the pigment freely, or else flies to the opposite extreme and takes it indiscriminately, causing smears and veil which utterly ruin the result. Of the hygroscopic agents, sugar and glucose—that is, cane and grape sugar respectively—has each its supporters, the latter being, perhaps, the one that exhibits most body, as well as undoubtedly the highest attraction for moisture. Honey, another form of saccharine, is in some respects, perhaps, superior to either, since its non-saccharine constituents give to it a "body" which renders it capable of use alone or in conjunction with glucose if care be exercised in the various manipulations.

The trouble experienced in using the saccharine substances alone—that is, without some non-hygroscopic matter—arises not from any insensitiveness or inability to form an image, but perhaps, rather the reverse of the latter, the too great *readiness* to take the powder. A film of glucose and bichromate alone will *commence* development as satisfactorily as any by the most elaborate formula; but, owing to its highly hygroscopic character, a stage is soon reached at which it becomes unmanageable, owing to the rapidity with which it attracts moisture when the heat of the plate is entirely gone. The alternative is to be content with a coarse and "smudgy" result, or to be constantly redrying the film and starting afresh, which is, to say the least, a tedious and troublesome process. The presence of a little gum or gelatine, by hardening the film, reduces the tendency to excessive affinity for moisture, and so brings the manipulation within the range of convenience.

Chief among the mechanical difficulties must be reckoned that of securing a perfectly smooth film, entirely free from dust or other specks. It will be readily comprehended from the very nature of the process, both as regards composition of the film and modified development, that any inequalities of surface must be in the highest degree detrimental to success. As a matter of fact, a minute speck of dust in the film forms a nucleus round which, at every sweep of the brush, more and more of the powder collects, until the once scarcely visible point becomes a hideous blemish. This form of trouble arises in two directions—in the difficulty of closely filtering the viscid and syrupy solutions, and in the proneness of the coated film to attract and arrest floating particles.

In the first respect, an entirely new solution I have been recently using is far superior to any other I have hitherto tried, and it is, at the same time, free from the special faults peculiar to those substances I have already named. Indeed, it is not too much to say that it almost puts a new aspect upon the working of the dusting-on process, so greatly are the manipulations simplified.

The chief variation from the ordinary formula lies in the substitution of mucilage of linseed for the gum arabic or other non-saccharine matter, and with this may be combined either best English loaf sugar or, preferably, sugar-candy. Glycerine is frequently added to increase the affinity for moisture in specially dry weather, though I always prefer to submit to slower development, rather than resort to its use, when possible. More reliable than glycerine, however, I have found to be the finer grades of molasses known as "golden syrup," the particular sample I have used successfully being a highly refined kind, sold in tins, and known as "Lyle's golden syrup." The advantage of this over glycerine is that it is less violently attractive of moisture, and therefore less liable to "rush" the development when used in full quantity.

The formula I have been using consists of the following ingredients:

Mucilage of linseed	20 ounces
Sugar candy (or loaf sugar)	1 ounce
Liquor ammoniæ fort	½ ounce
Potassium bichromate	1 ounce
Golden syrup as required.	

The linseed mucilage is made as follows: Take a moderately heaped teaspoonful of clean *unground* linseed, wash it in two or three changes of cold water to remove dust and dirt, and allow it to soak for some hours. The husks will then be found to be surrounded by a glazy mass of gelatinous mucilage, and the whole should then be transferred to an enamelled saucepan and raised to the boiling point, stirring well the whole time. After simmering for five or ten minutes, remove from the fire, and when ebullition has ceased, if the liquid be thick or "ropy," add more water and strain through fine muslin, while still quite hot, to remove the seeds. Afterwards filter more closely in front of the fire, to keep the liquid hot, and then allow to cool; and still further thin if it flows unevenly when poured on to glass. When quite cold add the ammonia. and, after some hours, again filter, and then set aside for some days, until the liquid becomes quite clear and bright and has deposited any flocculent matter that may be unremovable by filtration.

The bichromate of potash should be added in crystals a short time before required for use, and, if convenient, the solution should be heated, filtered, and used warm, a finer and more even film being obtained in that way. When newly mixed, the sensitive solution is a bright yellow orange color, which gradually changes to a brownish tinge with age. It remains usable, however, if kept in a cool, dark place, for some days, but should be thrown away when very dark.

W. B. Bolton, in Brit. Jour. Photog.

Notes and News.

David Tucker, a veteran photographic merchant of Buffalo, is doing a splendid business. He has on hand a large stock of the best goods which he sells at moderate prices. He is having an especially large demand for the Queen City Camera, a hand box making pictures 4 x 5 in size, and costing only $5.

The Corona Company, of Rochester, has sold its plant, business and patents to the Photo-Materials Company, of Rochester, N. Y.

From C. R. Davis, of Osage, Texas, comes a 5 x 8 representing the boring of an artesian well on a Texas prairie. Independent of the main subject, the photograph is highly interesting as a graphic description of life in the Southwest.

The technical work is very good, and reflects much credit on the maker.

Record of Photographic Patents.

484,165. Photographers' Background Holder. William J. Scandlin, Brooklyn, N. Y.

484,175. Photographic Printing Frame. Frederick O. Bynoe, London, England.

484,179. Finder Attachment for Cameras. William B. Coggswell, Syracuse, N. Y.

THE TOP NICHE.

"At last she has reached highest rung on the ladder of fame."

"Indeed!"

"Yes, her photograph is on exhibition and for sale in a Broadway shop-window!"

Queries and Answers.

361 B. A. R.—Is the sensitiveness of a Carbutt orthochromatic plate No. 27 equal to that of the "Eclipse," also marked No. 27, or has the addition of color sensitizer to the emulsion depressed to some extent general sensitiveness?

361 *Answer.*—The Carbutt orthochromatic plates are mainly sensitive to the green, yellow and orange rays, and therefore are objects of these colors more easy photographed than with ordinary emulsion. For example we have photographed "fireworks" with orthochromatic plates, and in a very small fraction of a second, which the Eclipse is not able to do, merely because the orthochromatic are exceedingly sensitive for warm colors, and the other not so. But in mostly all commercial orthochromatic plates there is a superabundance of color sensitizer, much more than is required to combine chemically with the silver haloid, in which case general sensitiveness must necessarily be depressed, the dye acting as a ray-filter, as it were. In ordinary work this depression is compensated by the sensitiveness for color, and we can candidly say that according to our own experience an orthochromatic No. 27 plate is considerably more sensitive than an Eclipse of No. 27, especially so in landscape work, when no ray-filter is used.

362 AURORA.—(1) Will you inform me through the "Correspondence" in THE TIMES, if there is a way in which I can get rid of the reflection in varnished furniture.

(2) Can you tell me of a recipe for hardening the surface of albumen paper, which is used during the washing and before toning? I had such a one some years ago, but lost it; it had chrome alum, citric acid, lemon, and other things in it, and it was exceedingly good not only to harden the film but it helped to give a very rich tone, and clear, brilliant lights. I got it out of a "Mosaic."

362 *Answer.*—(1) We recommend to use orthochromatic plates, and expose long enough to bring out all the finest details in the darker portions, when the highlights will be less harsh and glaring. We have considerable experience in that class of work, and can sympathize with you, but when the manufacturer insists upon having his wares photographed when thoroughly finished and varnished, he is the responsible party, not you.

(2) Can you tell from which volume of "Mosaics" the formula was taken? We have searched for it, but unsuccessfully. An ordinary alum solution of moderate strength, and accidified slightly with citric acid, or a little alum in the silver bath might give the same effect.

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W. I. LINCOLN ADAMS, Editor.

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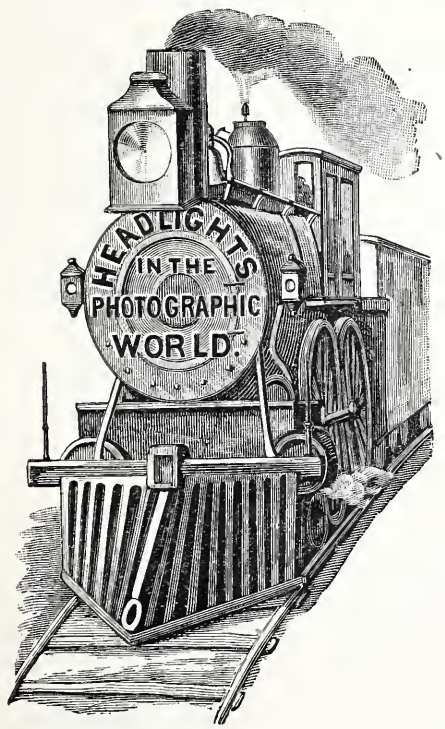
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Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

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240 Main St., Paterson, N. J.

SYRACUSE CAMERA CLUB, 322 South Salina St., Syracuse, N. Y., wants the September 4th issue of THE PHOTOGRAPHIC TIMES.

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FOR SALE.—A new 4¼ x 6½ Mogey Rapid Scenograph Lens; an excellent lens for landscapes, instantaneous views and groups. Regular price $20; will sell for $15 cash. Address "SCENOGRAPH,"
Care THE PHOTOGRAPHIC TIMES Office.

RAPID RECTILINEAR LENSES AT COST.—4 x 5, $5; 5x7, $12; 5x8, $7; 6½x8½, $8; 8x10, $12; 10x12, $18; 11x14, $24. Write for price list.
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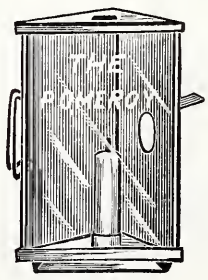
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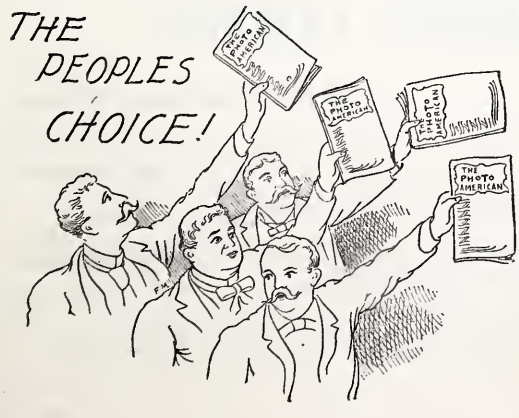
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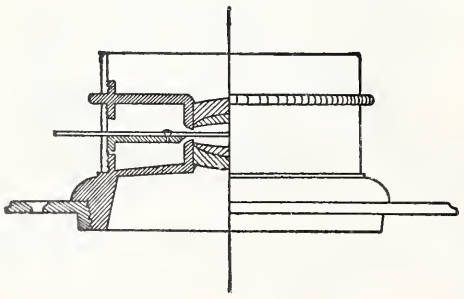
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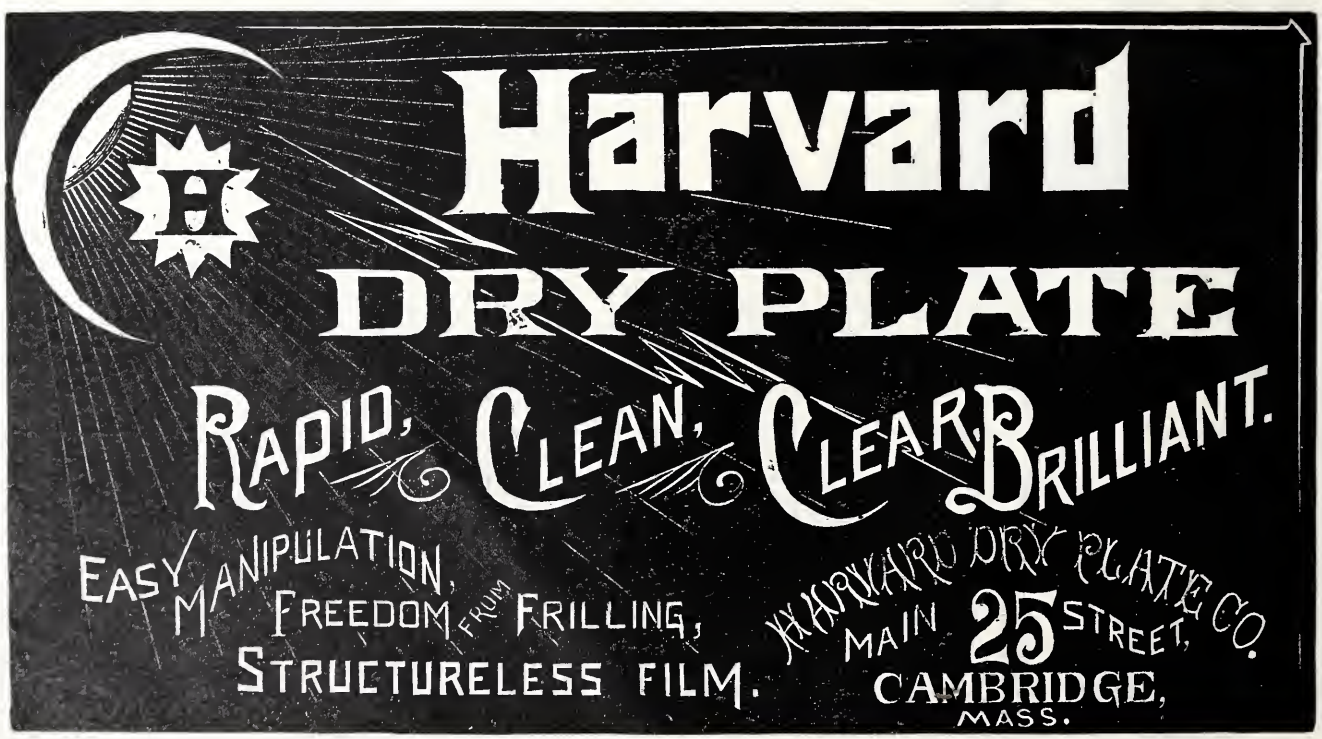
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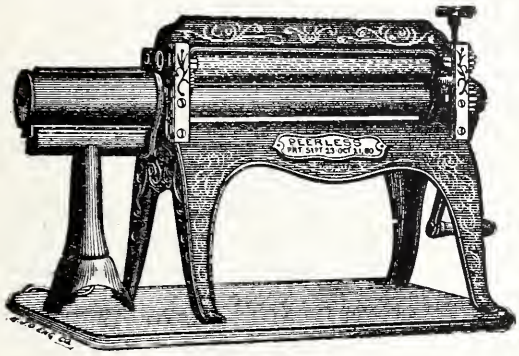
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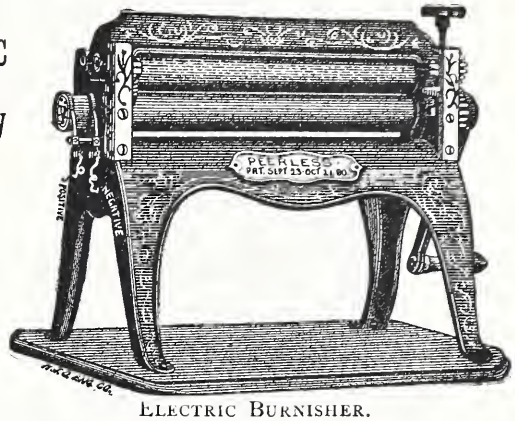
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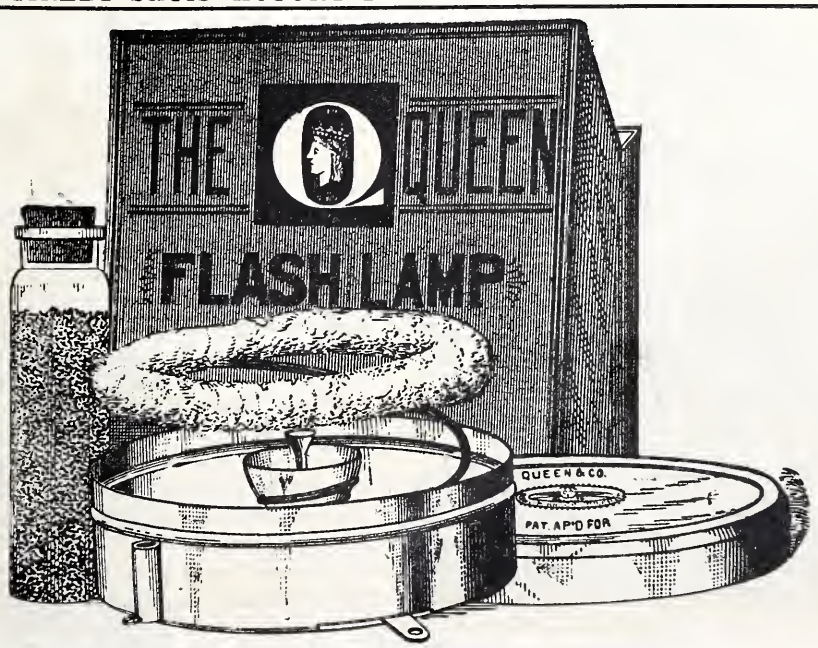
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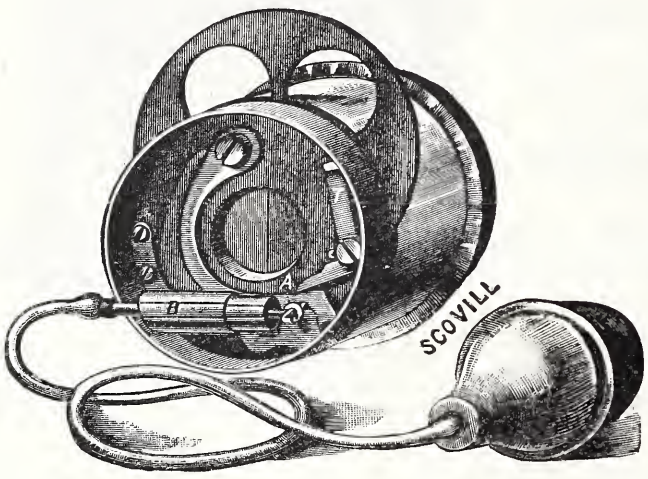
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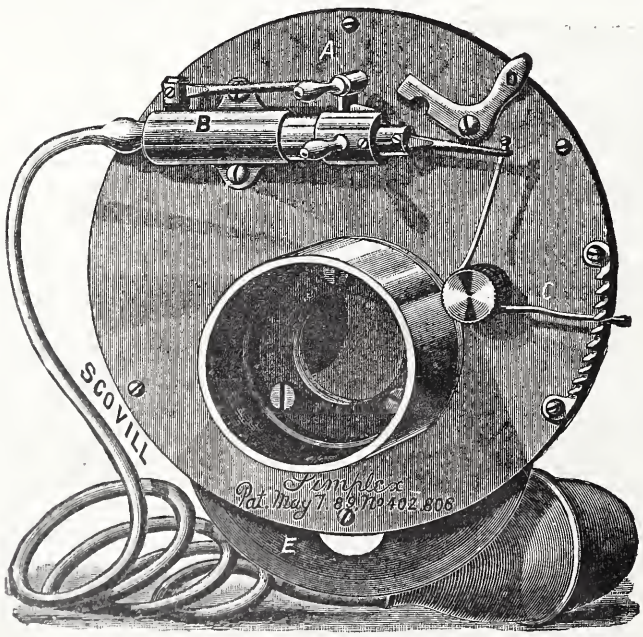
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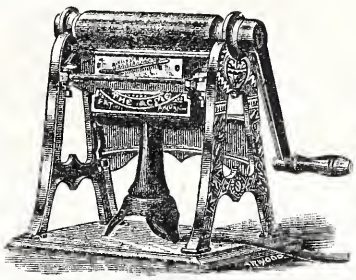
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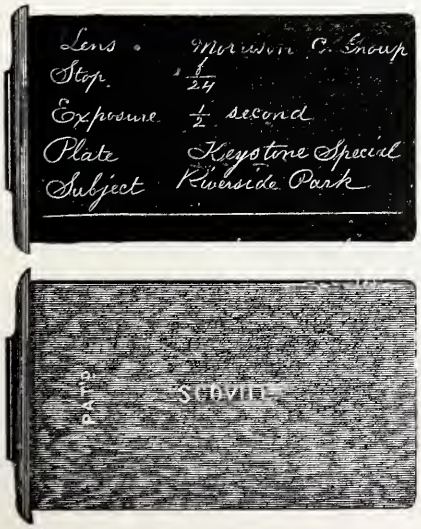
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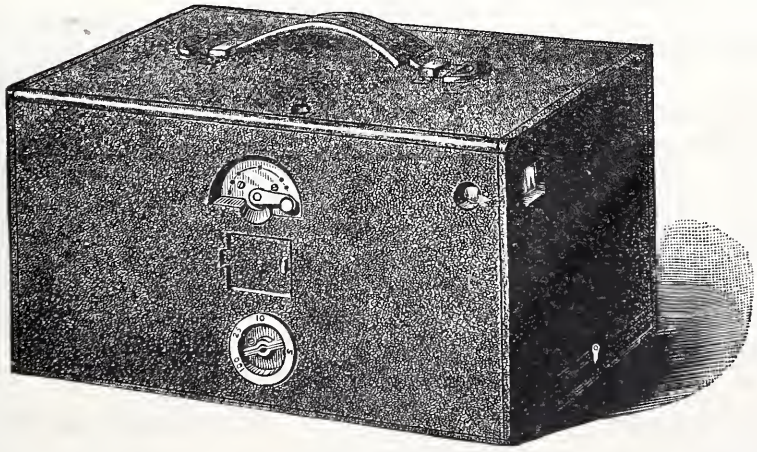
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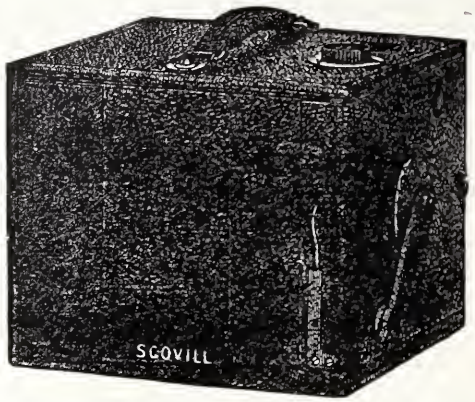
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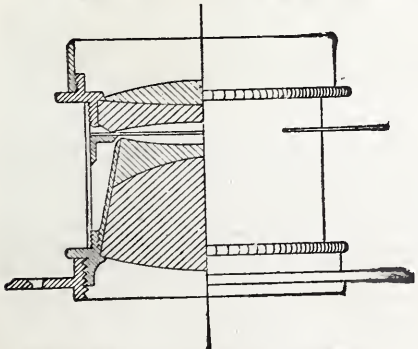
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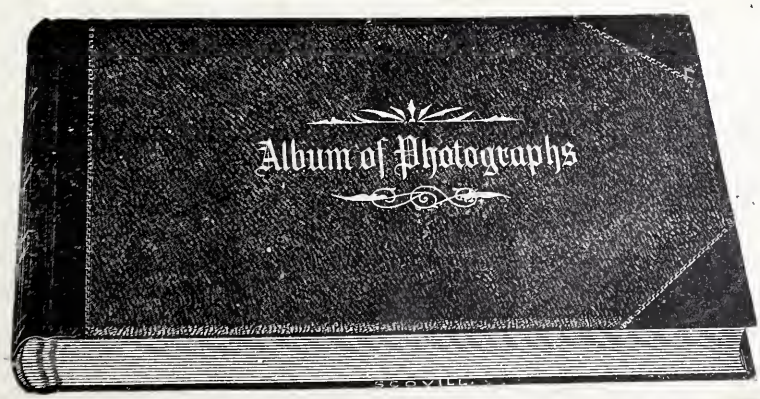
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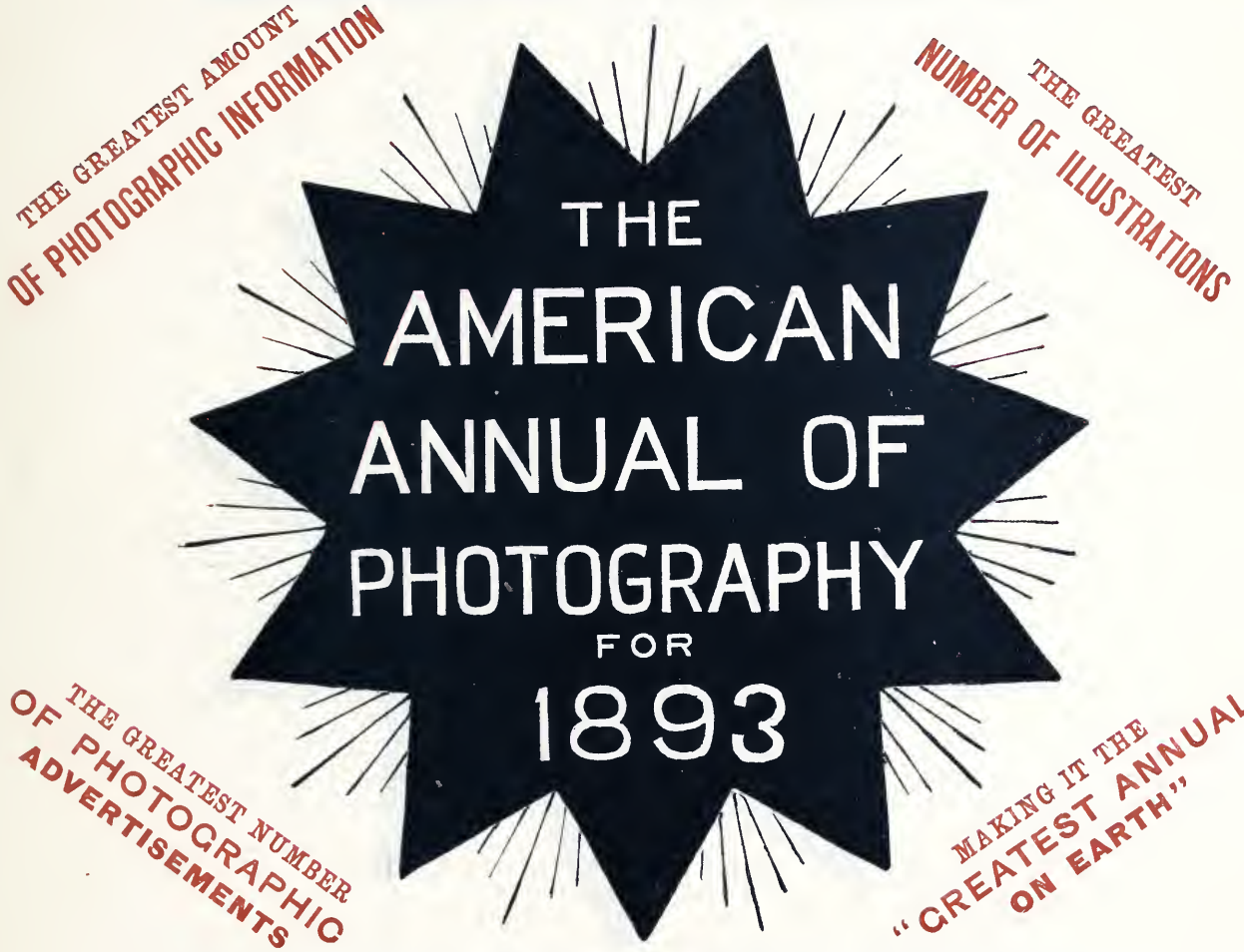
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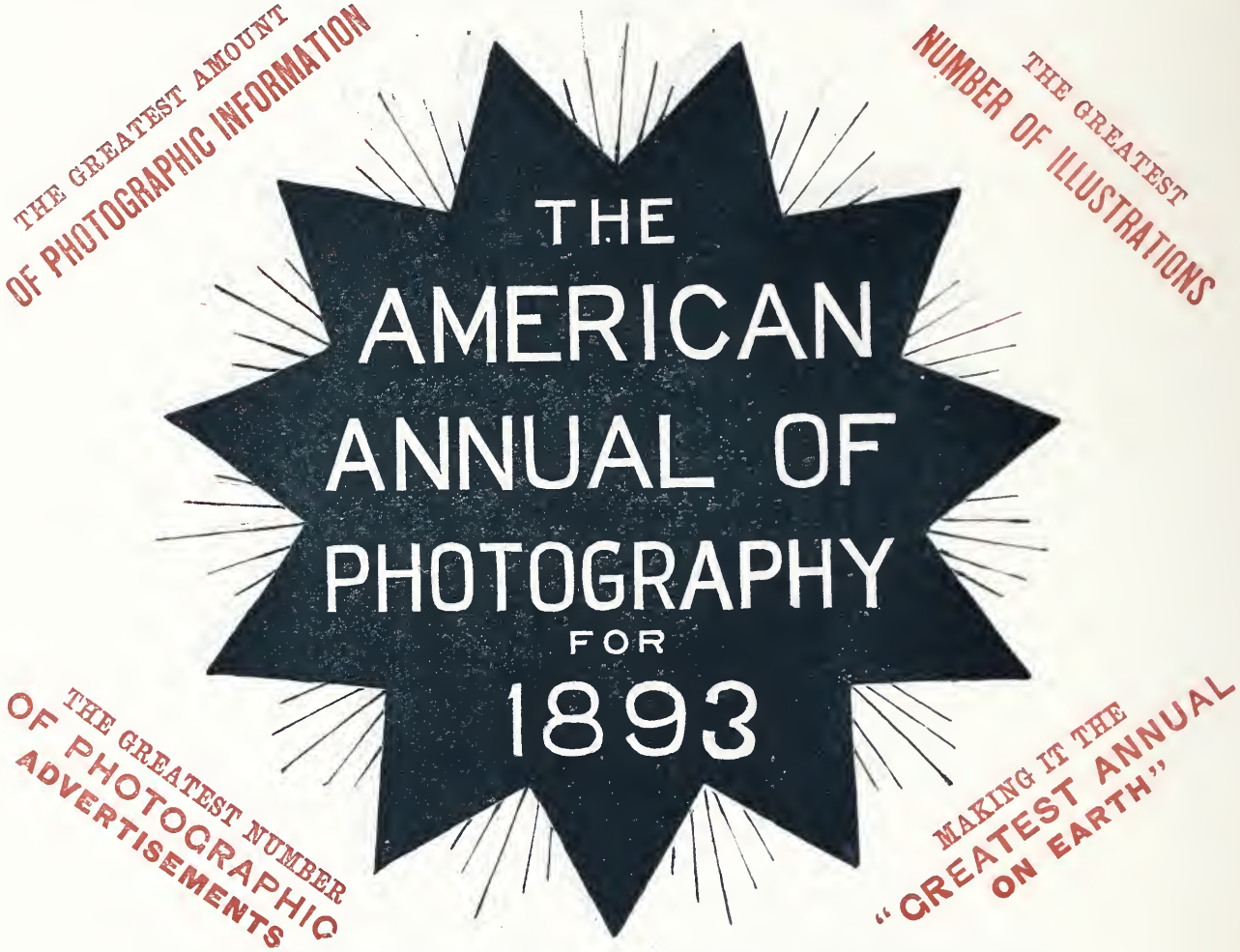
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THE MILL-RACE.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. OCTOBER 28, 1892. NO. 580.

THE MILL-RACE.

WE present our readers this week with another picture by Mr. Daniel Fraser, of Washington, who has already favored our readers with one or two highly artistic specimens of his skill with the camera.

The present picture was made near Rock Enon Springs, Va., and has been reproduced for this issue of THE PHOTOGRAPHIC TIMES, by the Weeks & Brill Engraving Co., of Philadelphia.

FIREWORKS AT CHAUTAUQUA.

THE PHOTOGRAPHIC TIMES contains a second illustration this week of a highly interesting subject. Neither picture is by the photogravure process, yet both are reproduced in the manner best adapted to their peculiar characteristics. This is especially true of THE FIREWORKS. The negative was made last summer at Chautauqua by Professor Ehrmann on one of Wuestner's excellent new orthochromatic plates.

It has been said that commercial orthochromatic plates could not respond to all that is asked of them, reproducing correctly, at the utmost, only two or three of the spectrum colors, and it has furthermore been asserted that they have limited keeping properties. To some extent this may be true, nevertheless we have found these plates to keep as well as their mother emulsions, and that for special purposes the American commercial plate answers admirably in nearly every case. For general landscape work, with heavy dark-green foliage, light-blue distant mountains, and when a ray-filter of moderate intensity is used, for electric phenomena, flames of any description, fireworks, or, for the reproducing of colored fabrics and paintings, they are of greatest advantage, as they reproduce color values, if not perfectly correct, at least approximately so, and sufficiently to satisfy the most severe critic. How well these plates reproduce yellow, orange and red, we leave our readers to judge from the photo-mechanical copy of the negative of fireworks made on the "Eagle" orthochromatic plate, a brand which we have found to be especially well adapted for this class of work.

The negatives were developed with S. P. C. eikoquinol, and were taken with the 4 x 5 Waterbury hand camera, smallest stop, and most rapid speed of the shutter. The fireworks were displayed at the Chautauqua Assembly Grounds, August 1st, 1892, in celebration of the nineteenth session of the Chautauqua Assembly.

COPYING OF ENGRAVINGS.

THE COLLODION *vs.* THE GELATINE PROCESS.

There is no question but that the wet collodion process is better adapted for the reproduction of engravings than the gelatino-bromide of silver process, yielding clearer negatives, which are less liable of being spoiled by intensification. It is preferred by photo-engravers for these reasons. But the sensitiveness of the photo-collodion film is, compared to that of the photo-gelatine film as about 1 (one) to .05 with plate of slow rapidity, and this becomes a very serious matter indeed when working by cloudy weather, as the exposure-time should then be lengthened for many minutes, the consequence of which all the well-known pin-holes and surface markings (silver reductions), defects which it is not always easy to prevent. On the other hand with gelatine plates not only the exposure-time is reduced at least in the relation of sensitiveness above given, but no matter how long the exposure may be lengthened no defect originates thereof provided the development be conducted as it should be.

Is the want of clearness in gelatine negatives a defect which one cannot remedy? Certainly not.

Copyrighted.

We find no difficulty to obtain with the Carbutt's plates, prepared specially for the purpose in question, negatives of sufficient intensity, quite clear in the absolute blacks (clear glass) and free from developing-fog. But there are some conditions to be observed; they are as follows:

The first condition—and it is also to be observed when using the wet collodion process—is to place the print or drawing in a cone made of white cardboard, in order that the light being upon it reflected from the sides, the grain of the paper be not reproduced.

The other conditions are:

1. To fix in front of the camera a cone lined with black velvet to prevent any side reflection of light on the lens.

2. To have the sides of the camera perfectly dead black so as they do not reflect any light, no matter how weak, which is indeed very common and most objectionable.

3. To back the plate with an absorbent matter of light to prevent halation.

It is well that all these cares be taken when working with the collodion process. However, the first condition excepted, they are not imperative, on account of the comparatively little sensitiveness to weak lights of the iodo-silver collodion film employed in copying engravings, etchings, etc.

What is the best developer to bring out the white and black image impressed on gelatine films?

Hydroquinone, on account of its property of yielding intensity, forms no doubt a good developer, one a good deal preferable to that formed by eikonogen or para-amidophenol. But we think, and that is what our experiments tell us, that a strong pyrogallol developer *well restrained* gives on the whole the most satisfactory results. *P. C. D.*

PHOTOGRAPHY ABROAD.

Photogravure.

Mr. Pierre Petit has some time ago published a half-tone photogravure process—for which he took a patent, we think—having for its object to obtain pure whites, which, generally, are more or less tinted on account of the image being engraved either on a plate already grained, or from a cliché grained by dusting, or by a screen in crossed lines as it is well known.

To obtain perfectly pure whites it is evident that the plate should be grained only where a tint is impressed; it is to that end that Mr. Petit has devised the process in question, which, substantially, is as follows:

A copper plate is prepared with bitumen of Judea, exposed under a cliché, and the image developed in the ordinary manner; the whites are then represented by the bare copper. This done the plate is dusted with rosin and heated until the grain is fixed. But—and it is in this which resides the novelty of the process—by heating the grain of rosin on the impressed and consequently insoluble bitumen, the latter again becomes soluble under the grains, and when it is dissolved by turpentine oil with the rosin, the latter leaves a granulation on the non-altered bitumen; hence by preparing the plate as usual with bichromated gelatine and exposing it a second time to the luminous action under the cliché reappeard in a such a manner as the image be not doubled, a grain will be formed, after biting-in with iron perchloride, only where there is a tint in the image, and the whites, having been preserved from the action of the mordant, will be perfectly white.

A Simple Printing-out Platinotype Process.

In the present volume of The Photographic Times, No. 564, July 8, we have published an article on the method of working the platinotype by the old process, and also the improved printing-out process of Pizzighelli. This latter is so important, not only on account of its simplicity, the beautiful photographs which can be obtained, but principally because it yields proofs absolutely permanent; that it is always the subject of new investigations to render it more and more practical. Lately Herr Watzek has communicated to the *Rundschau*, not a new process, but one still more simplified according to Pizzighelli's method. It is as follows:

The paper is first coated with a paste made of

Best arrowroot	1 gramme
Sodium oxalate, saturated solution	50 cub. cents.

The paper thus sized keeps well, and, therefore, can be prepared in quantity for future use.

For black tones it is sensitized with a platinous chloride compound consisting of cold saturated solutions of

Potassium chloroplatinite	5 cub. cents.
Sodium ferric oxalate	8 cub. cents.
Potassium chlorate	3 drops

For brown tones the compound is made by mixing cold saturated solution of

Potassium chloroplatinite	5 cub. cents.
Sodium ferric oxalate	4 cub. cents.
Sodium oxalate	3 cub. cents.
Mercuric chloride	1 cub. cent.
Potassium chlorate	3 drops

If more potassium chlorate be employed more contrasts are obtained; if less mercuric chloride the tone tends to blackness.

The quantity of sensitizing solution above given is that necessary to sensitize a whole sheet of paper, photographic size. The sensitized paper must be rapidly dried, etc., as directed in the description of the process given in the issue of The Times above stated.

Amidol.

The following are the results obtained by Mr. De Noter with the new developer, the amidol, as related by Mr. Ch. Gravier in *L'Amateur Photographe:*

The experiments have been made with the rapid gelatino-bromide of silver plates prepared by the brothers Lumière, stop *f*/25, Berthiot's shutter at full speed.

In the following solution:

Water	1000
Sodium sulphite	200
Amidol	20

the image was developed almost instantaneously, with harsh contrasts and very transparent whites, no traces of fog.

In a developer compounded as follows, the image appeared in twelve seconds, and was fully developed in one minute. The blacks were gray-blue, transparent, the half-tints well out, the whites without veil:

Water	1000
Sodium sulphite	60
Amidol	3

Other compounds were tried, but on the whole the above formula forms a developer the best adapted for the development of instantanés.

For time exposure "Ki-Non" recommends a solution of

Water	1000
Sodium sulphite	40

Before use one adds 0.5 parts of amidol for 100 parts of this sulphite solution. If the details hang back, a little of a saturated solution of sodium sulphite—which acts as an accelerator—is added; if, on the contrary, the cliché has a tendency to become gray, one adds a few drops of a strong solution of bromide of *potassium*. (Avoid using ammonium bromide.)

This developer is also very good for portraits. Its action is similar to that of the ferrous oxalate developer, but it admits, as the alkaline developer, a greater latitude in the time of exposure.

Development of Instantaneous Views by Eikonogen.

The *Revue Suisse* gives the following directions for developing instantanés by eikonogen:

The plate is first treated by the following compounds, which acts slowly and does not tend to intensification:

A.

Hot water	1000
Sodium sulphite	75
Eikonogen	15

(Let cool.)

B.

Water	1000
Sodium carbonate	150

For use, mix 3 parts of A with 1 part of B. The development is finished in a more energetic compound, consisting of 3 parts of C and 1 part of D.

C.

Hot water	1000
Sodium sulphite	75
Eikonogen	35

D.

Water	1000
Potassium carbonate	150

Para-amidophenol.

Para-amidophenol presents the same peculiarity observed in the other developing agent. A strong solution gives great contrasts; if too diluted, the negatives are flat, that is, the image too uniform. Hence for instantanés and, generally, for time-exposed plates it is advisable to commence the development with a diluted solution, one containing a small per centage of the reagent, and according to circumstances to add gradually by small quantities a very concentrated solution of para-amidophenol containing the usual proportions of sodium sulphite and of alkali.

As it is seen whatever be the developing agent preferred the general rule we have often pointed out should be adhered to:

Develop to first obtain gradations, then the general intensity.

A PLEA FOR PYRO DEVELOPMENT.

It is astonishing to one who sees anything of our current photographic literature, that so little is written in favor of our good old friend pyro, to which dry-plate photography is so indebted, and so much is said extolling the newer developers and their beauty of action under every condition; and this not only by the photographic expert who knows whereof he speaks, but by the veriest tyro

who is told by the directions on the bottle to thin it down with water and proceed *ad infinitum*.

Far be it from your correspondent to say that these developers are not useful; they are most excellent, and the practical working of our art is rendered easier and better by their proper understanding and use. They are not, however, so well suited to the varied requirements of the out-door photographer who wishes to make soft and rich toned prints direct from the larger sized plates; nor to the beginner, who must first thoroughly learn the use of the different parts of which all developers are composed—the active principle, its accelerator and restrainer—before he can apply his knowledge to the testing of new formulas and choosing from them such as may meet his several needs.

For out-door photography, therefore, pyro development is preferred because of the soft warm colored negatives it produces, giving every variation of half-tone, with ability to control the density and color of the sky as it will appear in the finished print; or, in case of a marine view, to stop its action at any time when the *motif* of the picture is just reached—the shadow under the lee bow of a fisherman, or the white-winged spray dashing upon the rocks, or the foamy waters parted by the cut-water of the rapidly-moving yacht—that we may build up the required density without over-developing, and thus taking the beauty out of that little whole which makes the picture.

Use any formula for pyro you choose, preferably the simplest, and I know of none better than that of Mr. Andrew Pringle, with soda as the accelerator.

Sulphite of soda, crystals.....4 ounces
Water to about.....7 ounces

Dissolve and make slightly acid with sulphuric acid, then pour into a one-ounce bottle of pyro and make up with water to 9 ounces. This is a 10 per cent. solution, and 10 minims=1 grain pyro.

Carbonate of soda, crystals.....1 ounce, avoir.
Water to.....9 ounces

This is also a 10 per cent. solution, and 10 minims equal 1 grain of the soda salt.

A normal developer is composed of

Pyro ..... 3 grains= 30 minims
Soda carb..... ..12 grains=120 minims
Water to..... 1 ounce

In landscape photography we should always give a full and generous exposure, which, with the above normal developer, would amount to an over-exposure; so begin development with 3 ounces of water, added to the 1 ounce of normal developer as above, as a restrainer and to keep the plate well under control and secure softness; add a few grains of soda from time to time if needful; it is best not to add more pyro to a fully and properly exposed plate, as the addition of the accelerator from time to time will stimulate the pyro already present to further action, and result in a soft negative, with perfect gradation between high lights and shadows.

Sometimes if an extra brilliant or sparkling negative is wanted, pour off the old developer when the plate is fully developed, wash slightly and then flood with an ounce or two of the strong normal developer for a few seconds and watch carefully; this will cause the negative to fairly sparkle, as said above, and must be washed off the instant the result is gained.

Now wash, fix and dry the plate, and compare with your friends who have used some of the newer formulas; your own negative ought to have *body*, with softness, richness and a delicate chocolate tint which will tone down the too violent action of light upon the sensitive surface far better than tissue-paper without this tint; the negative is not stained with pyro in the common acceptance of the word. Your friend's negative is apt to be black and white, to appear thin and without body, though perhaps far denser than yours; it lacks that something which, in your own eyes at least, makes the pyro-developed plate so rich and full of character. The pyro plate will give a soft, velvety, warm-toned print upon albumen paper; the other plate will be more apt to give a harder, colder tone, that will lack something of the velvety appearance so beautiful in foliage.

For marine views it is well to start development with rather more pyro than is used for landscapes, but otherwise the process will be similar to the above.

Therefore, say I, give the plate plenty of time for full exposure, and supplement this by a slow building up of the image by alkaline pyro well restrained with water, and the result will gratify the most æsthetic taste in the matter of a perfect negative; and the negative decides the character of the positive.

John M. Bemis.

INDUSTRIAL PHOTOGRAPHY.

[Specially translated for The Photographic Times from "Photo Club de Paris."]

Decoration of Windows.

Fashion, in reviving the taste for stained glasses in apartments, has permitted to the artists and

glass-makers the utilizing of the photographic processes for the ornament of windows.

We lately had the occasion of visiting one of the large establishments of Paris, the proprietors of which, both engineers and artists, employ, for the beautiful stained-glass windows they make, all the processes that a long practice and a great science have suggested for their industry.

We will indicate the three photographic processes which Messrs. Lémal and Raquet prefer as being quite stable and resisting to the ordinary cleaning.

Before describing these processes, it is necessary, we think, to remind a few elementary *data* which it is not indifferent to state here.

There are three kinds of glass plates employed for windows: those colored in the mass (pot glass), those with two tints or doubled (flashed glass), and lastly, the white glasses. The first ones serve, so to say, for the mosaic coloration of the subject; the second, which are made by blowing process, in spreading on the white glass a thin coating of colored glass, serves to form, by means of etching with acid, or, as formerly, by the grinding-stone, the ornaments on the cloths, the laces, the borders, sometimes, even the lights on certain parts of the dresses; their utility is to avoid the lead-work and the most sharp cuts. All the glasses prepared for windows are made with two coatings, not only for the use we have presently indicated, but also to obtain that transparency, that richness of tone which the pot glass never presents.

As to the white glass, it serves as a support for the painting made by artists, or for the photographic image produced one of its surface.

The glass are stained by means of metallic oxides or their salts: The salts of copper when vitrified give a red, that employed for the windows of our dark-room; the salts of silver produce the yellow; a rose is obtained with the salts of gold, and blue with the salts of platinum; these four colorations are only made on double glasses.

If the three last tints are united, and if one sees them by transparency, a more or less deep gray, according to the value of each tint, is obtained. It is on this observation that Messrs. Maréchal and Tessié du Motay have based, in 1865, the photographic process following:

A silver positive image, obtained by the collodion process, is fixed, then immersed, for a certain period, into a solution of chloride of gold; in this bath a part of the metallic silver, which constitutes the image, is replaced by gold; after washing one the proof is transferred into a solution of chloride or of nitrate of platinum where another part of the silver is replaced by platinum.

The collodion pellicle holds therefore an image which in consequence of the two substitutions is constituted with silver, gold and platinum. Hence if the glass plate, upon which the image is made, is placed in a muffle, and if one raise the temperature to a pretty high degree (500 to 600 deg. C.) to form a silicate of silver, gold and platinum, a gray coloration will be obtained, just as that produced by the superposition of the three glasses separately colored by the three metallic salts.

A portrait of a woman by us presented to the French Society is a specimen as fine as it can be desired; it provines from the establishment of Messrs. Lémal & Raquet.

The second process is based on the decomposition of the salts of copper oxide by the silver salts.

If one places into perfect contact a negative image on collodion upon one of these red glasses used for the lantern of our dark-room, which is a glazing formed by a silicate of copper oxide (Cu_2O), it suffices, after desiccation, to cover it with a light coating of pipe clay, then to place the glass in muffle furnace, heated to 500 deg. C., to obtain the decomposition of the copper salt; the image is negative by transparency, but positive by reflexion, and the reverse by using a positive image.

The third photographic process utilized by Messrs. Lémal and Raquet is specially employed for the reproductions of designs and paintings; it is known since a long time as the *powder process;* the principles have been indicated by A. Poitevin, who discovered it.

One makes a positive on a glass plate from the subject to be reproduced; it serves as a cliché.

Then a white glass plate is coated with the following mucilage:

Water	100 c.c.=27 drachms
Syrup of sugar	2 c.c.=32 minims
Honey	0.5 gramme=7½ grains
Glucose	.8 grammes=123 grains
Gum arabic	5 grammes=77 grains
Potassium bichromate,	2 to 3 grammes=31 to 46 grains

The coating is dried by means of a spirit-lamp in the dark-room, then placed, while still warm, in a printing frame, upon the positive cliché.

The exposure-time to light varies according to the luminous intensity and the opacity of the cliché, from five to eight minutes.

Under the influence of light, the potassium bichromate is reduced and modifies the mucilage, which loses its adhesive properties, and this proportionally to the time of exposure and the inten-

sity of the light; the parts not modified remain hygroscopic. It will, then, suffice to pass on the surface of the mucilage-coating, after insolation, a soft badger brush charged with an enamel powder, called grizzle (*grisaille*), to obtain a positive reproduction which will be fixed by firing.

If on this white and black image one applies colored enamels, one obtains a vitrified picture, whose shadows are modelled by the photographic impression.

Lastly we have seen in the same establishment a fine diapositive, made by Mr. Nadar, on a gelatino-bromide plate, backed by a ground glass, and set in a stained window. This reminded us that this artist has shown in his exhibit of 1889, photographic ornaments applied to windows; and it is interesting to point out that this indication has been applied in the manufactures of ornament glasses. *Chs. Gravier.*

ON THE TONING BATH.

In the work "*Virages et Fixages*" lately published by Gauthier Villars, the author, Mr. P. Mercier, examines from a theoretical and practical point of view the behaviors of the compounds constituting the toning baths, and the actions of the latter during the substitution process which gives rise to the coloration of photographs.

From this remarkable work we have translated for the benefit of our readers, who do not understand French, the following instructive chapter on the actions of the alkaline bodies on auric chloride:

Formation of the Toning Baths. Complete Theory.

When to a solution of ordinary chloride of gold concentrated at one per cent., a solution of caustic potash of bicarbonate of potash or any other alkali, is gradually added until neutralization, one observes that the solution previously of a *canary-yellow* color, assumes little by little a *reddish-yellow* tint, and that, instead of forming with potassium iodide a brown precipitate or a brown coloration, as this takes place with pure chloride of gold, it only becomes of a fine yellow color.

If another quantity of alkali be added, and the solution heated or simply diluted with distilled water, one observes that the solution is completely decolored in a certain period, and that, in this state, it does not give, at least immediately, any coloration by the addition of potassium iodide.

Similar effects are observed in the preparation of the toning bath.

Let us take one gramme of chloride of gold as neutral as possible, for example the chloride of gold and potassium: this salt always presents in practice an acid reaction. Let us dissolve it in one liter of distilled water. We thus obtain a solution of a fine *canary-yellow* color, giving rise with the iodide of potassium a more or less deep brownish coloration. Now, if we neutralize the solution by adding little by little chalk in powder and shaking slightly, then filtering the mixture a little while after, we obtain a solution nearly neutral, *still yellow, but a much lighter yellow*, this solution is still colored by the iodide of potassium, but much less than before its neutralization. Employed as it is for toning, it acts rapidly but eats up the image, as before the addition of the chalk powder, it is the first mode of action of the neutral tonings observed by Messrs. Davanne and Girard.

Instead of employing the bath just after its preparation let us wait a few days, and let us examine it anew. We see that it is completely decolored and is no more tinted by the addition of iodide of potassium, or, at least very slowly. With a very old bath a few hours are necessary before the yellow tint manifests itself. It is the second manner of using the neutral tonings, that which is ordinarily employed.

Let us proceed with our experiment. If the bath has been well prepared it is as neutral as possible, it will keep its activity for a very long time. But its action will, however, become slower by time, and we see that a moment comes when it acts with an extreme slowness and becomes useless by this fact.

If, instead of a neutral bath, we use an ordinary alkaline bath, that is to say, if instead of neutralizing the chloride of gold with carbonate of lime, we treat it by an alkaline salt in excess, we will observe the same phenomena, but realized one after the others, in a much shorter period.

From what precedes, it results that the toning bath can contain gold in three different states and appear:

1. Colored bright yellow and active.
2. Colored pale yellow and very active.
3. Incolorous and active.
4. Incolorous and inactive.

What does take place in these solutions? It is what we will attempt to explain in the limits of our actual knowledge:

Theory.—Only two degrees of chlorization were formerly known, the perchloride and the protochloride, $AuCl_3$ and $AuCl$, the atomic weight of gold being 196.5. Only two principal oxides were also known: (1) The tritoxide Au_2Cl_3, the hydrate of which, $Au_2O_3,10H_2O$ (Figuier), specially studied by Oberkampf, Frémy, Dumas, Figuier

and Pelletier, constitutes the auric acid, easily yielding alkaline aurates; and (2) The protoxide, Au_2O, principally studied by Berzelius, Figuier and Pelletier.

The protoxide of gold is produced in various circumstances, notably by the action of organic matters, the citrates, the acetates, benzoates, etc., on the auric compounds. It constitutes a black or blue-violet powder, which, according to Pelletier, can dissolve in the alkalies when it is recently formed. Without being absolutely certain that there is a simple solution or a real combination, we can admit, to facilitate the following explanation, that an alkaline sub-aurite is produced (as it is likewise admitted that the plombous oxide gives rise to plombites in dissolving in the alkalies). But that sub-aurite is little stable, and it suffices of a very weak acid to cause its decomposition and give rise to a deposit of gold oxide.

Berzelius admitted also the existence of an intermediary gold oxide. Auo and Pratt has demonstrated (*Comptes rendu*, Vol. LXX., p. 840), that this oxide is produced as a green olive hydrate by heating a solution of gold chloride with excess of acid, to which has been added potassium carbonate in sufficient quantity to dissolve the precipitate formed.

Since, Schottlaender has ratified the formula of this oxide, which he considers as a well characterized acid (*Liebig's Ann. Chem.*, Vol. CCXVII., p. 312). On the other hand, J. Thomsen, in his researches on the salts of gold, has directly obtained the aurous chloride, or intermediary chloride, $Au\,Cl_2$, corresponding to the above oxide. It is a red substance resolved by water into sub-aurous chloride AuCl and trichloride $AuCl_3$.

Now let us follow the different phases of the preparation of the toning baths:

1. When one employs the perchloride of gold $AuCl_3$ (or the alkaline chloraurates, $AuCl_3KCl$) in simple diluted solution, not neutralized, this solution eats up the proofs, for three atoms of silver are dissolved, while only one atom of gold is deposited; thus:

$$AuCl_3 + 3Ag = 3AgCl + Au.$$

2. When to the above diluted solution one adds an alkali or an alkaline salt not in excess, an intermediary chloride is first formed, according to a reaction which gives rise to a chloride and a hypochlorite (which is spontaneously transformed into chlorate and a new chloride: $3HClO = KClO_3 + 2KCl$), reaction which we can represent thus:

$$2AuCl_3 + 2KOH = 2AuCl_3 + KCl + KClO + H_2O.$$

But the aurous chloride or intermediary cannot subsist in presence of water; it is soon resolved into protochloride and trichloride, $2AuCl_2 = AuCl + AuCl_3$, in such a manner as a part of the latter is constantly regenerated. The liquor is therefore in part rapidly decolored at first, then slowly.

In this state, that is, so long as it is more or less yellow, the bath is very active, because it contains much gold protochloride, but it still eats up the proofs in consequence of the presence of a certain quantity of ordinary chloride, $AuCl_3$.*

3. Two cases can then present themselves:

A. If the bath is alkaline, or at least quite neutral, either by preparing it with a salt having a true alkaline reaction, or with chalk or talc, carbonate of magnesia, etc., leaving the solution during a sufficient period in contact with these bodies, the preceding reactions continue until the perfect decoloration of the bath, so that the total reduction of the chloride of gold into protochloride can be represented by

$$AuCl_3 + 2KOH = AuCl + KCl + KClO_3 + H2O.$$

or more completely by

$$3AuCl_3 + 6KOH = 3AuCl + 5KCl + KClO_3 + 3H_2O.\dagger$$

The bath can thus regularly tone the proofs without destroying any details, for one atom of silver is replaced by one atom of gold:

$$Ag + AuCl = AgCl + Au.$$

B. If the toning bath remains acid, that is, if it has been prepared with an alkaline salt employed in quantities insufficient to obtain a complete neutralization, it is spontaneously decolored if the salt used is an *organic salt.* In this case, this salt can act as a direct reducing agent, and convert the perchloride into protochloride, either because its acid is a weak acid which can be replaced by hydrochloric acid; the action would be then similar to that of the alkaline solutions. It is what we observe with the ordinary acidulous bath with acetate of sodium, anisate, etc., which, although not reddening litmus paper, can tone the proofs without destroying the half-tints if they are entirely decolored.

But if one has prepared the bath, remaining acid, with a mineral salt having no reducing properties, the solution can indefinitely stay yellow. It is thus, for example, that by dissolving 50 centi-

* I thought at first that the intermediary chloride could exist in the solution in the state of chloraurite. But the direct experiment, made with the intermediary chloride, demonstrates that it is rapidly resolved in $AuCl_3 + AuCl$, not only in contact with pure water, but even in contact with alkaline solutions when they are not very concentrated.

† I must remark that this theory leads to the same conclusions as the hypothesis of Messrs. Davanne & Girard to explain the complete decoloration of the toning baths, and admits also the formation in these baths of a certain quantity of clorates. I cite textually: "..... This reduction can be easily explained. The perchloride of gold Au_2Cl_3, is little stable, and with facility gives up the excess of chlorine, which it holds, provided it be in presence of an oxidizable substance. And such is the conditions of the chlorides of potassium, sodium, calcium with it contained in the bath, under the influence of the perchloride of gold, Au_2Cl_3, and in the absence of acid substances, these chlorides are oxidized and transtormed into chlorates by a process exactly semblable to that employed in the industry for the preparation of the chlorate of potash, and which consists in treating the chloride of potassium by the hypochloride of lime."

grammes of gold trichloride and 1 (one) gramme of sodium pyrophosphate in one (1) liter of water, one obtains a bath slightly acid, which always remains more or less tinted, and which, consequently, keeps almost indefinitely the property of toning the proofs, but without more or less eating them up.

4. The bath being brought to the precise moment where it is entirely decolored, let us examine what now happens according as it is neutral, alkaline or acid.

If the bath is quite neutral and kept sheltered from the air and light, it must keep indefinitely its original activity, nothing modifying the protochloride of gold. In fact it is what the experience demonstrates, and if the neutral bath becomes less active after a long time, the principal cause of this fact should be attributed to the glass vials in which they are kept, whose action should not be neglected, as it will be explained.

If the bath contains an excess of alkali, this body continues to act on the protochloride of gold formed, and an action entirely analogous to that which we have seen to take place, we have placed the ordinary chloride of gold in presence of an alkaline substance, is produced. Chlorine unites with the alkaline metal, potassium, sodium, etc., but instead of an hypochlorite, it is the sub-aurous chloride which is formed :

$$2AuCl + 2KOH = Au_2O + KCl + H_2O$$

Berzelius has shown, in fact, that the sub-aurous oxide or protochloride of gold can be obtained by the action, in the cold, of potassa on the protochloride ("*Annales de Chimie et de Physique*, Vol. XVIII., p. 151).

But, as we have seen it before, this sub-aurous oxide, which would not be reduced by the silver of the proofs, is not always precipitated, because it is soluble in the alkalies (Pelletier), forming unstable sub-aurites.

The protochloride of gold, active agent of the toning, when it is in presence of an alkali in excess, *is, therefore, little by little transformed into sub-aurite, and the baths, although often remaining limpid, lose their activity with a rapidity so much the greater as they are more alkaline.*

But if the bath has been decolored by an organic salt, and if, instead of being alkaline or neutral, it is very slightly acid, the preceding reaction cannot so easily take place, there always remains some protochloride of gold in the solution and this keeps its activity as it were perfectly neutral. The small quantity of protoöxide of gold which can slowly be formed is little by little precipitated, and it is what explains the black deposit which one observes in this kind of bath, even when they are still active; this deposit is constituted not by metallic gold, but by the oxide.

Action of Water in the Gold Toning Bath.—It is here the place of pointing out a fact which, although not yet explained, plays, however, a preponderating part in the phenomena which occur in the preparation of toning baths.

I refer to the considerable action of water on the decoloration of the baths.

We have seen what one observes when the diluted solutions are prepared in the ordinary manner. But very different results are obtained when one operates exactly in a similar way with solutions concentrated at 1 (one) part of chloride of gold for 100 parts of water instead of 1000; *in these cases, the neutralized or slightly alkalinized solutions become more aud more colored instead of being decolored, and yield an abundant deposit, black or greenish, of hydrated oxide of gold.*

According to the proportion or the nature of the alkaline salt employed, the deposit is more or less slowly formed, and is constituted either by the intermediary oxide of Prat, or by the auric oxide de Figiner, or by the oxychloride of gold of Oberkampf or Frémy.

With an excess of alkali or by ebullition, the solution is afterwards completely decolored.* But if one does not exaggerate the quantity, one can obtain very colored baths relatively depositing very little and keeping pretty well in that state.† This bath, diluted after a certain period to form a solution of the usual strength, will give very slightly tinted solutions which will rapidly be decolored by the only fact of dilution, exactly as if they were prepared all ready for use.

From this it results that concentrated toning baths keeping their activity for a good deal longer time than the ordinary bath can be prepared; it suffices to dilute them for use. These concentrated solutions evaporated in the vacuum, or at a proper temperature, can yield a saline deposit constituting a true combination of alkaline aurate with an excess of the salt employed : I have been able

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* It is what takes place with the following solution :

Chloride of gold, brown	1
Caustic potassa	1
Water	100

Or this one :

Chloride of gold, brown	1
Borax	10
Water	100

† Such is the solution following :

Chloride of gold, brown	1
Sodium acetate	15
Water	100

Or, better :

Chloride of gold, brown	1
Sodium tungstate	5
Water	100

to thus obtain *auro-phosphates*, *auro-borates*, *auro-succinates*, *auro-acetates*, *etc.*, *of sodium*, compounds little defined (for the proportions of the salt of gold and that of the alkaline salt can be varied), but capable of rendering real services, for it suffices to dissolve them to obtain the usual toning bath.

The different properties of the neutralized auri-ferrous solutions, according as they are concentrated or diluted, indicate the differences in their composition.

We would possess, without any doubt, the complete explanation of these differences if we knew exactly the quantity of heat disengaged or absorbed in the various combinations of gold: 1st, with chlorine; 2d, with oxygen. It is certain that many of them can be produced separately or conjointly according to the circumstances, and we know that, by varying the quantity of the solvent in the reactions which, at a thermic point of view, can or not be indifferent, the quantity of liquid can sufficiently modify the heat put into play to determine a change in the sense of their reactions.

Therefore, we can admit that the salt of gold which, in diluted solution, would pass to the state of sub-chloride, would be in concentrated solutions, in the state of aurite or aurate, allowing the aurous or auric oxides to be little by little deposited, as it is demonstrated by the experiment.

NOTE.—The history of the gold compounds is still so imperfect that, notwithstanding the enticement presented by the preceding complete theory, one can attribute to it only a speculative character All seems to prove that it is thus that the phenomena are in their whole produced. But does the sub-aurous chloride remain free in the neutral solutions? Does it exist in the state of chloro-aurite AuClKCl? or is it produced, in presence of the alkaline salt employed, sub-aurous salts, sub-acetochlorides, sub-borochloride of gold, etc.? It is what it is not for us possible to determine.

I did endeavor to avoid any confusion in this long explanation, discarding carefully all the details pertaining to each experiment. There are some which perfectly demonstrate the obscurity still prevailing, on the modifications of the gold compounds, in general. I will cite, for example, the following:

If one adds from 40 to 50 grammes of sugar or of honey to 1 (one) litre of water containing 1 (one) gramme of brown chloride of gold, the solution remains yellow and gradually deposits metallic gold, red and brilliant.

If the sugar be replaced by an equal quantity of starch in powder, the solution is rapidly decolored and can then tone certain proofs, such as those on paper prepared with citro-chloride emulsion (termed aristotype); but however incolorous and appearing to contain a salt of gold at the minimum, it is still acid and gives, by potassium iodide, a coloration or a precipitate brown violet, analogous to that produced, with the same reagent, the salts of gold at the maximum.

COLLOPHOTOTYPY.

THE author states that it is an error to suppose that a negative suitable for printing on albumen paper is also suitable for collotype work. The best negative is one that is soft and delicate, that yields a flat gray print on albumen paper containing all the gradations, but for lined work the spaces between the lines must be very dense, or the whites may become tinted. The printing plates require a preliminary treatment, and the two following formulas are suggested:

A.

Distilled water	10 parts
Sodium silicate	5 parts
Fresh albumen	8 parts
Ammonia	1 part

B.

Stale beer	500 parts
Potassium silicate	60 parts
Caustic soda	2 parts

The thoroughly cleaned glass plate is dusted, flowed over with this solution, and dried at a temperature of 99½ deg. Fahr. When dry, the plate should show a matt-surface, and it is then plunged, still warm, in very cold water (the greater the difference between the temperature of the plate and the temperature of the water the better), left for some minutes, then well washed, and allowed to dry spontaneously. If this be done properly the plate should show a strong iridescence due to the albumen being broken up into fine grains. The plate is then coated with a light sensitive film prepared according to the following formula:

Gelatine	25 parts
Distilled water	275 parts
Potassium bichromate	5 parts
Ammonia bichromate	5 parts
Ammonia hydrate	5 parts
Alcohol	10 parts
Chrome alum	½ part in 40 parts of water

The gelatine is placed, to swell, in 250 parts distilled water, and is dissolved in a water bath heated to 122 to 123 deg. Fahr. The bichromate salts are then added with stirring, then the alcohol and ammonia, and then drop by drop, and with carefully stirring, the chrome alum. It is also permissible to add the chrome alum to the water in which the gelatine is swelled. Chrome alum produces a much softer grain, and causes the plate to take the ink easier, and the shadows print better without becoming glossy. The addition of the ammonia preserves the solution for another day, even in summer, without the film becoming coarse-grained; it also prevents the partial decomposition of the gelatine by the chrome alum; the alcohol assists in the flowing of the solution. Some gelatines require more chrome alum, especially in summer, but care is necessary in its use, as if too much be used there is hardly any grain, and the plate takes the ink all over. Many gelatines are unsuitable; the most suitable gelatine is one of medium hardness.

With very soft or flat negatives, the quantity of ammonia bichromate may be increased; with hard negatives it may be diminished or altogether left out. The coating of the plate with the chromated gelatine is not an easy operation, the slightest dust, small air bubbles, or a grain of sand are sufficient to render the plate unsuitable. The drying oven should be carefully freed from dust with a clean cloth, and leveled carefully. The plate is then heated to 99½ deg. Fahr. The plate must be flowed over with a

definite quantity of the chromated gelatine, and the film should not be too thick and not too thin. The best way to find the correct proportion is to take the length and breadth of the plate in inches, multiply these numbers into one another, and take the fourth of the product; this number gives the weight in grammes for the correct proportion of the solution; this portion is weighed out and carefully flowed over the plate. If there be any air bubbles or specks of dust, they are removed by means of a clean splinter of wood. The plate is then laid in the drying oven and dried at a temperature of 132 deg. Fahr.; when dry, it is well to have yellow glass windows to the drying oven so as to see how the operation proceeds; the light is turned out, and the plates allowed to cool. They are then printed upon in the usual way.

The author recommends that the spring should be taken off the printing frame, and the cover fastened down by wedges slipped between the back and the pressure bars. The printing may be gauged either by a photometer or by inspection. When the printing has proceeded far enough, the plate is plunged into water and washed till the color has disappeared on the half-tones. The temperature of the washing water should not exceed 77 deg. Fahr. in summer, and in winter should be heated to 50 deg. Fahr.; when thoroughly washed, the plate is placed to dry. In hot weather it is advisable to remove excessive moisture by dabbing (not rubbing) with a dry, clean cloth, in order to prevent the unaltered gelatine from becoming fluid. A half-tone plate thus prepared should show, while still moist when held towards the light, a delicate matt-surface, but the grain should be thicker or thinner according to the action of the light; when dry, the plate should have the same character, but should still be transparent. Held obliquely, the finest modelling in both the lights and shades should be distinctly visible. If when held in this way the grain appears coarse, the prints will be rough; this may arise from too thick a film. Draughts in the drying oven also give rise to coarse grains; but frequently this appearance is not noticeable in the print.

On the press is laid a thick, smooth iron plate, on this is laid a piece of smooth white paper, and upon that a thick glass plate, which is fixed in position by clamps. This plate is carefully cleaned from all dust, the collotype plate is damped with water on all four edges, and placed on the glass plate; if only sufficient water be used, the cohesion holds this plate firmly in position.

The following solution is prepared:

Glycerine	600 parts
Water	300 parts
Ammonia	100 parts
Sodium hyposulphite	20 parts

This is filtered and a little poured on the plate, and spread all over it with a fine soft sponge; this is left on for some minutes, until the film, when touched with the ball of the finger, appears swollen in all parts. When sufficiently swollen, the excess of fluid is removed with a sponge, and the plate is dabbed with a soft cloth, free from seams; a sheet of India paper is laid on the plate and drawn lightly through the press. Should the finger slide still easily over the damp film, it is still too damp, and another piece of paper must be laid upon it, and it must be passed through the press again; when the finger meets with resistance, the rolling up with color can commence.

Instructions are next given for preparing the color stones, and it is said that the addition of a drop of fine olive oil to the color enables the plate to take up the color more easily. A caution is given against the use of lakes, as they are frequently unstable in light. The printing room must be cool in summer and thoroughly warmed in winter, but it must be dry in both cases. In a cold room the best collotype plate gives harsh prints; in damp rooms the plate takes up too much moisture, and if the room be warm the film becomes soft and is very soon injured. The first pulls are usually useless; six or seven must be taken in order to see whether the whole plate or portion of it requires further etching, or whether it is ready for printing. The thick ink should not bring out the whole picture, but should only bite on the shadows and half-tones.

Should all the details take ink the plate is either over printed, is not damp enough, or the color may be too soft, or there may be too much color on the roller. The color should first be tested and then further etching may be tried. Too much ink on the plate gives it a rough appearance. If the color be too thin the plate appears smeary, if it be not damp enough the image appears weak when it is rolled up.

The roller should be freed from all color, then passed quickly and vigorously over the plate to remove as much color as possible. Should the required clearness be not obtained in this way the plate must be carefully cleaned from all color with turpentine. For this purpose plenty of turpentine must be used and a soft cloth free from dust and dirt.

When the plate shows the matt appearance it did when first placed in the press the etching may be proceeded with. A sponge filled with the previously mentioned etching solution is passed equally all over the plate, and the etching action allowed to go on for some time. The plate is then dried carefully and rolled up, care being taken to use stronger color and to roll with care until the shadows appear strong and clear in all details. This is usually very strongly noticeable after the second etching; then the thin ink is applied with a glue roller with weak pressure and slow rolling. Should, however, the picture not appear clear in the lights it requires further etching; 10 parts of ammonia are added to 100 parts of the previously mentioned etching solution, and the process similar to that mentioned before is gone through. If it be still impossible to obtain a print as it should appear, the plate has been over-exposed. Should the plate by strong pressure and slow rolling not take up the color the plate is either under-exposed, too damp, the color is too strong, or there is too little on the roller. Plenty of softer color may be taken on the roller, or the plate may be allowed to dry for several hours, or it may be washed with alcohol; if it still does not take up the color it may be washed with a weak solution of oxgall, dried, and etched for another half hour; if it still does not take the ink the plate may be rejected as useless. Sometimes the shadows take too little color and the half-tones appear too strong; such plates may, while in the inked condition, be etched in the lights and half-tones. In this way a collotype plate may be strengthened in the lights.

At the close of the day's work the ink should be cleaned off the plate with turpentine and slightly etched in the morning; the roller and the color stones must also be thoroughly cleaned. Should the plate during the night take up too much moisture a piece of absorbent paper may be laid upon it and passed through the press.

DIFFICULTIES IN THE COLLOTYPE PROCESS AND THEIR REMEDIES.

The film strips from the plate during printing. The silicate film was either dried at too low a temperature or was too long in damp air, or was not sufficiently dried; this defect can be detected by the plate not showing a sufficiently strong iridescence.

Double pictures. This is due to careless laying of the paper on the plate, to air bubbles between paper and film, or to slow working.

Sweating of the collotype plate. Cause—The plate was too cold during the night and the printing room was too damp. Cure—Heat the closed room and then open the window.

The plate does not take up the color easily. Cause—Rolling too quickly with too little ink on roller, the room too cold or too damp, or too much etching fluid on the plate. In this case wash the plate with alcohol.

The plate loses its clearness in the lights. Cause—The plate has been dried at too low a temperature in the drying oven. Too high a temperature in the summer time or too warm a room in winter. In the later cases the damping water must be cooled with ice.

The plate takes up too much color and yields tinted prints. Causes—Too thin a film for printing, too slowly rolled, soft color, flat negative. Remedy—Add ammonia to the etching liquid and etch the inked plate.

The prints are rough and coarse. Cause—Too thick a film.

The plate will not etch. Cause—Dried at too great a heat, accidentally exposed to light, over-exposed.

The plate does not print even under the greatest pressure. Cause—The film is not damp enough, must be damped strongly with ammonia.

The plate holds the paper strongly. Remedy—Wash with dilute oxgall.

The glue roller does not take up the color. It is still too fresh and damp, and must be hardened with chrome alum (1 in 60).

In rolling with the leather roller streaks appear. Cause—A bad roller.

A. Beyersdorff.

—Photo. Cor.

Correspondence.

A FLASH OF LIGHTNING.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: In your issue of October 14th I note a very fine photograph of lightning taken by Mr. Catterfield, showing a broad band of flame.

This interests me greatly, as I caught the twin brother of this flash out West, from the rear platform of a rapidly moving train, crossing the prairie of North Dakota.

The flash I caught shows an oscillatory movement, proving that its breadth is due to a number of flashes of lightning passing at quick intervals to and fro over nearly the same path, until the electric energy is expended.

Very truly yours,

W. N. Jennings.

PHILADELPHIA, October 20, 1892.

Photographic Societies.

THE COLUMBUS CAMERA CLUB.

THE awards in the Prize Print Contest of the Columbus Camera Club have just been announced, a large number of meritorious prints were entered, and the officers of the club propose to place them on free exhibition for the benefit of the general public.

The judges had considerable difficulty in making the awards and decided to give first, second and third place in the order of merit to the three best prints in each class. Messrs. Martin, Bentz and Persche, all artists and amateur photographers, but not members of the club were the awarding committee.

LANDSCAPES.—Mr. E. Huffman won first place with a very interesting view on Alum Creek, near Nelson's Dam, which is shown in the picture. The print is a 5 x 7 panel, a fine composition, well rendered. Second place went to Mr. W. B. Kimball for a bromide print representing a deserted mill. The sombre effect of the surrounding landscape is in keeping with the main object of the view. Third place was awarded to Prof. J. N. Bradford's view of the spring and lake on the Ohio State University Grounds. The rendering of detail and lights and shadows in foliage and water is exceptionally good.

FIGURES.—Miss Hetty Getz's panel entitled "Clover Leaf" was given first place. Miss Getz is one of the two figures represented in the picture; carelessly seated on a porch she looks inquiringly into the face of a small boy seated before her. The posing of the figures is excellent and the entire composition one of great merit. Second in the figure class is by Mr. E. Huffman, winner of first in landscapes, and would be well worthy of a place in the landscape class as well as that in which it won second place. It might be called "The Stepping Stones." Two young girls are timidly stepping from stone to stone projecting above the surface of a shallow stream. Half hidden in the deep grass on the bank is a dog watching their experiment with great interest. It is two to one that the girls get their feet wet. Third place belongs to Mr. F. H. Howe's picture of three bull-terrier puppies

INSTANTANEOUS.—First and second in this class were both awarded to Mr. F. H. Howe. First for a street view showing Barnum's Circus on parade; the picture is full of life and motion. Second represents a small boy teasing his playmate. Both of the children are laughing and the expression of the faces shows that the picture was caught at a happy moment for both photographer and the subjects. Third place was awarded to Mr. C. Doty's barnyard view. Many moving animals and persons have been caught without movement showing, and the photographic work is as perfect in detail as a time exposure.

Prof. J. N. Bradford of the Ohio State University, and Prof. Tight of Dennison University, have been appointed a committee of the Ohio Academy of Science to procure photographs of all objects of scientific interest throughout the State, and have issued a request to all photographers to contribute. There is much of scientific interest in the neighborhood of every city and village in Ohio, and when photographed and arranged by the committee a record of very great value will be secured. We trust the photographers throughout the State will lend their aid in this important work.

Notes and News.

Mr. Julius F. Sachse is announced to deliver a lecture on Philadelphia's Share in the Development of Photography, before the Franklin Institute on December 16.

Vandalism.—One of the most complete acts of vandalism ever committed in Chicago resulted from the midnight visit of unknown parties to the picture enlarging establishment of Inglis & Co., No. 2637 State Street, Tuesday night.

Forty-one pictures in various stages of preparation, a number of them all ready for delivery, were rendered worthless by the slash of a knife-blade. The pictures were ruined for all purposes, even the smallest puncture causing the canvas to curl and turn outward at the unprepared and unsecured edges. Nearly all the pictures were enlargements of photographs from life, and the knife blade was directed at the counterfeit faces. These pictures were in the sepia process and in colors, and the slashes on each ranged from one to twelve inches in length.

Besides the work of the knife the vandals visited the dark-room in the basement and mixed several large jars of process emulsion, ruining the entire preparation. The loss to pictures, material, and the theft of two artists' air brushes, with loss of time, is estimated at $1,000.

Entrance was made by unlocking the front door, and sample pictures hanging about the front room were slashed, care having evidently been taken to spoil the faces in them. Some, high up on the wall, were cut across the lower portion. A rectangular picture in oil of the horse-shoe curve, on the Pennsylvania road, received the attention of the callers as did an old, worthless, unfinished picture on the floor.

But the real work of destruction had been accomplished after leaving this room. In the large rear room, or studio, were a number of pictures all ready for delivery; several of them for out of town, others for patrons only a few doors away. Not a canvas was spared, and here is where the loss is felt. Among the pictures destroyed were three of a New York banker who died several years ago, and whose daughter had placed an order recently, which was completed Monday. Altogether there was forty-one canvases ruined by knife slashes.

Inglis & Co. have done a great deal of work for the World's Fair people enlarging pictures of the buildings at Jackson Park. A number of these valuable pieces of work leaned against the wall in the front room, but they were wrapped for delivery and passed unmolested.—*The Chicago Tribune.*

Record of Photographic Patents.

484,456. Camera Shutter. Henry C. Platt, Nantucket, Massachusetts.

484,569. Photographic Plate-Holder. Arthur M. Pierce, Brooklyn, N. Y.

484,615. Optometer. Jacob S. Sherman, Cassopalis, Michigan.

484,699. Photographic Dark-Chamber. Isaac Bryner, Callaway, Nebraska.

HIS SPECIALTY.

"Here's a picture showing a place in Kentucky where whiskey is manufactured in violation of the laws of the Government. It is taken from a photograph."

"That photographer must make a specialty of *still* life!"

Queries and Answers.

363 W. J. G. ROLLA, MO.—How can I prevent bronzing of the plate in developing? It appears to be a deposit from the developer, yet it occurs with all different developers and different makes of plates of which I have five brands now on hand. It begins on the edge of the plate and works in until the entire plate is covered, if the developing is continued. Can be rubbed off while developing or after fixing. I use pure rain water and C. P. and everything else.

363 *Answer.*—Bronzing of plates as you describe it, is caused by long continued development in strongly alkaline solutions. The effect will occur with any brand of bromide of silver gelatine emulsion, and with any developer under certain conditions.

Your plates are much under-exposed there is no doubt; expose longer, develop in normal time and you will have no bronzing with any of your developers,

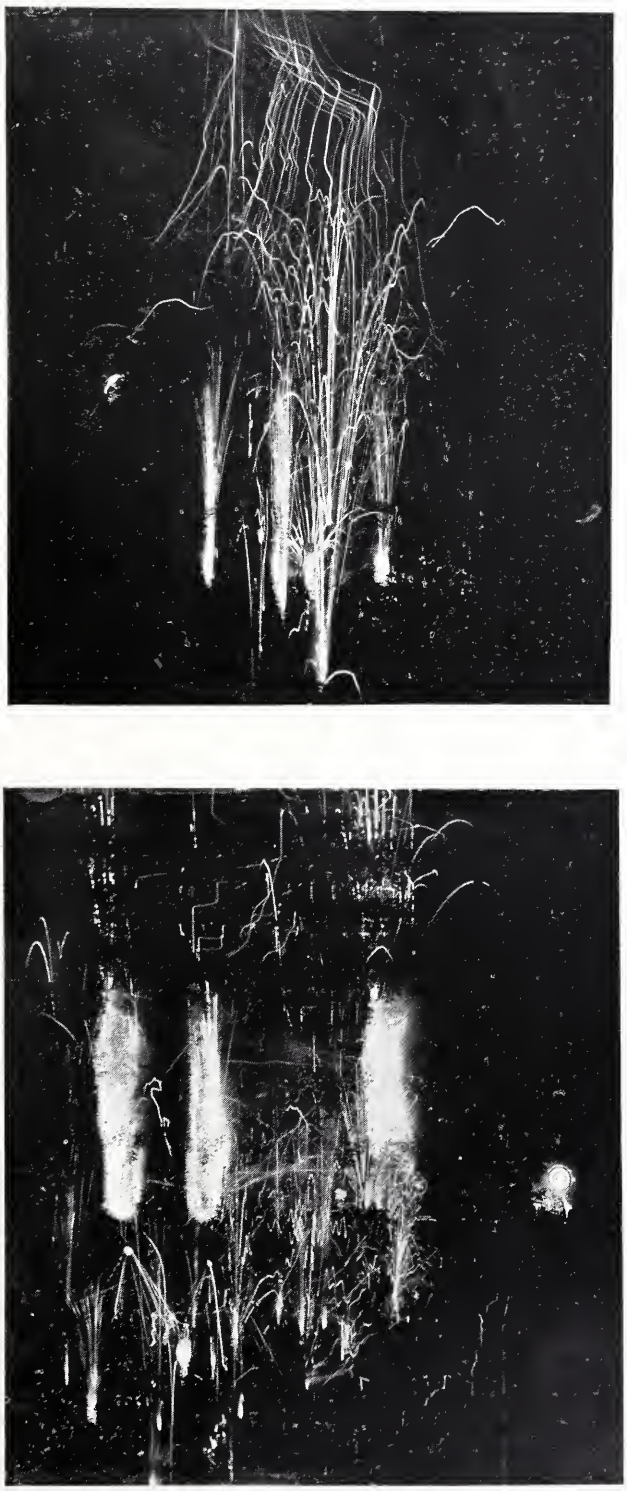
The bronzy deposit can be rubbed off with an alcohol moistened ray, but still better can it be removed with a very weak solution of ferricyanide of potassium and hypo provided the negative is intense enough to tolerate a slight reduction.

364 PETIT.—(1) In my developing room I have one window. Would you advise having this glazed with ruby glass so as to be able to develop during the day? (2) Also, do you consider quick plates superior to slow for landscape work?

364 *Answer.*—(1) Glazing with ruby and canary-colored glass gives a very safe light, but two thicknesses of cherry cloth, and between them one of golden fabric does equally well, and is not so expensive. (2) By all means use plates of moderate sensitiveness for outdoor work. The Carbutt orthochromatic sensitive No. 23 is an excellent plate for landscapes, and we know of none better.

365 L. E. T.—I send some prints which I would like you to examine, and to tell me through THE TIMES what is the trouble with them. I have used Three Crown, Eagle, and Steamer, all with the same results. Have silvered from one to five minutes, and dried and fumed in the usual way. Have used a bath from 40 grains to 60, all with bad effect. My bath is just neutral. I have tried every way that I could think of but can't better the prints. If you can offer any suggestions they will be greatly appreciated.

365 *Answer.*—These very annoying and perplexing effects are not the results of an inferior sort of paper, nor of your method of sensitizing. The fault is in the toning bath, which is probably too alkaline. You do not say what formula you are using. Were you, for example, in the habit to tone with the chloride of lime bath, and the nitrate of silver had been completely washed from the paper, such effects might result. Tell us the composition of your toning bath and it will be much easier to explain to you the cause of your failure.



CHARLES EHRMANN, Photo.

FIRE-WORKS AT CHAUTAUQUA.

ON WUESTNER'S NEW ORTHOCHROMATIC PLATES.

CHAUTAUQUA SUPPLEMENT

TO THE

Photographic Times.

CONDUCTED BY PROFESSOR CHARLES EHRMANN.

OCTOBER, 1892.

WE may well remember with pleasure and satisfaction our latest professional sojourn at the Assembly Grounds. In regard to work done, the last class, that of 1892, was one of the most successful. Her students, without exception, were of the most desirable kind, refined ladies and gentlemen, who took up photography not only as a means of recreation or divertisement, but they embraced with heart and hand the practice and the theories of the art-science. Among them were missionaries of both sexes, who, in far off Hindostan or China, intend to illustrate their public lectures, by photographic lantern slides; architects, teachers and other professionals, men and women to whom photography will be a valuable assistant in the pursuit of their studies. With much praise must we speak of our younger students, little folks of nine and twelve years of age, who by obedience, attention and diligence have made light the instructor's difficult task.

Incessant rains and electric storms of unusual violence interfered with the work of the school, but notwithstanding all the obstacles encountered the final results can be spoken of as satisfactory. The accomplishments attained by many students can be rated highly, and as some of them have joined the corresponding class, to remain under instruction for one year, at least, there is every hope for their future and continuous success.

The most interesting feature of last summer's session was doubtless the exhibition of photographs in the school-rooms, and those of lantern slides in the same place and on the lawn before the Athenæum. They surpassed anything photographic that has ever been shown before in Chautauqua. Graduates of former classes, and candidates for the so much desired Chautauqua diploma, had rivalled with each other to display but excellent work, pleasing to and admired by our thousands of visitors, *connoisseurs*, and the instructor of the school.

Let us throw a retrospective glance upon these exhibits from the critical standpoint. Our attention is first of all directed towards the collections shown by the EXCHANGE CLUB, collected during the last two years. They are the best and most reliable exponents of what the school has accomplished. In the majority they were from excellent artistic and technical negatives, but as for quality of prints, there were but few good ones among them, the most of them below mediocrity and some positively bad. All printing methods taught in the school were represented. First of all stood the orthodox albumen paper process, selected by more advanced scholars. The prints were all excellent, of fine tone, and sufficient depth, those made two years ago, brilliant and white and in every way as fine as if made but yesterday. We cannot say the same of almost any of the great number of aristo prints. A great variety of tones were represented by them, green, yellow, red and blue, showing conclusively how few of the scholars have mastered the process of toning these papers correctly. But most unfortunately were many of these prints, even those of the recent exchanges of May and February last not only in a state of fading, but there were some so far gone that but an indistinguishable yellow stain remained on the paper. It is sad to say, some of the worst of these prints came from the hands of parties whose negatives we have always placed foremost in the ranks of our students.

Blue printing is not much cultivated by the members of the Club, but what there was of it, all made according to Lessson XI. deserves to be praised. A few kallitypes and platinum prints were not up to the standard, but matt surface prints made after the formula of Lesson X. were excellent. No bromides were shown.

Similar remarks must be made of the pictures comprising the general exhibition. Among them were preëminent those on matt-surface silver paper, some of them toned with gold, but others with platinum. The former were vigorous and brilliant, the latter but dull and feeble, notwithstanding the very beautiful negatives printed from. Carpenter, of Ohio, had among several albumens a very fine platinum, on account of subject, tech-

nique and manner of finish probably the best single picture in the whole collection, certainly the most attractive.

There were two other collections on platinum paper. The albumens, mostly larger pictures, and many of them from negatives on Carbutt orthochromatic plates were as a rule of first-class quality. Our worthy superintendent, Chas. W. Hull, and G. W. Hart, of Brooklyn, leading the van, and those of Scadin, Canfield, Miss Turner and Miss Moore, Keay, Geisse, Robinson, Miss Baldwin, and Miss Cresswell were also of highest order. The great majority of pictures shown were on chloride of silver emulsion paper, gelatine aristo and omega predominating, and there were some on collodion and on celloidine. They all had been made recently, and looked bright and fresh, but towards the end of the session a good many began to show evidence of fading. Neal, Barnes, Geisse, Wood, Mrs. Pierce, and Miss Pearsons had evidently the best pictures, but even with them a great variety of tones could be observed. In blue printing Miss Skeel and Miss Baldwin excelled. A few opals were of but doubtful quality, and of bromides there was but one in the whole collection of nearly 1000 prints, and that an enlargement.

The lantern slides were all very good excepting, perhaps, a few, not quite intense enough for oxy-hydro, but sufficiently so for petroleum light.

Several amateurs not connected with the school, foremost among them Mr. Walker of Utica, exhibited excellent work, alongside that of the students. Mr. John Carbutt, the Bradfisch & Pierce Co., Chas. Scolik, of Vienna, and Lieut. L. David, of the same place, Chas. Cooper & Co., E. Edwards and Ed. Bierstadt, to all of whom we express thanks, had by splendid contributions assisted to make the exhibition a decided success.

The exhibitions of the Chautauqua School are growing more interesting, and contain better material from year to year. In the individual interest of the student and that of Chautauqua generally, efforts should be constantly made to show publicly what we have accomplished.

The examination papers returned answered by competitors were in many cases proof of the success of our method of instructing by correspondence. Of the 41 candidates, there was not one below 80 per cent., many had attained to 100 per cent., and among them were several papers which, if published, would be excellent handbooks on practical photography.

Notice to Students.

The advanced class is now open. Graduates are admitted at once, and on payment of $10 which includes subscription for The Photographic Times for one year. Under-graduates or those not at all connected with the school will be subjected to examination, consisting of the answering of twenty-five questions, relating to practical and theoretical photography and the presentation of three finished photographs made by the applicant.

Uncontrollable circumstances have delayed the publication in book form of Harrison's "Chemistry." We rely therefore for the present upon our old text-book: Roscoe's "Elementary Chemistry." Other books wanted by the students in course of time are R. Meldola's "Photographic Chemistry," Burton's "Optics," and H. P. Robinson's "Pictorial Effects in Photography." Reading will be prescribed to each individual student. Examinations will be held every three months. Eighty per cent. of the sum of the questions answered correctly during one term entitles to a blue, or respectively to a gold or red seal.

Students of the advanced class are expected to show occasionally proof of their progress in practical photography. Finished pictures presented will be criticised in these columns.

The Exchange Club.

The Chautauqua Photographic Exchange Club is a filial institution of the school, and remains notwithstanding the election of a new President, under the control of the instructor, who will aid and assist to promote the interests of the Club.

The superintendent and the instructor are members *ex-officio*.

Report of the President.

Professor Chas. Ehrmann, who has been President of this Club for the past five years, has been compelled by other duties to decline a re-election, very much to the regret of its members. It was owing to his ability, his interest in its success, his just, yet kindly, criticism that the Club occupies the high position it holds to-day, reflecting honor on the Chautauqua School of Photography, of which Prof. Ehrmann has so long been the efficient head.

The in-coming President returns his sincere thanks for the honor conferred on him. It is an honor he would not have solicited, as he did not feel that he had sufficient experience and the ability necessary to fill the position as it should be and has been filled. Fortunately, Mrs. C. L. Pierce, who has done so much for the advancement of the Club, still remains its Secretary, and with the experience of Mr. G. W. Hart, Assistant Secretary, the Club will likely not suffer from the comparative inexperience of its President.

The August exchanges, although smaller in numbers than usual, only fourteen pictures, are fully equal in quality to any of its predecessors. They are so uniformly good that the task of criticising them is a very difficult one. Ten of them are landscapes, the other four still-life pictures. Why no portraits or interiors?

Aside from the value of the Exchanges, giving us splendid pictures, worth many times the trouble and cost of making them, is their educational value. When we know just how the best negatives are made we have something that will assist us in our work. Heretofore the members have put the record of lens, time, plate, etc., on the back of the print, which was lost when mounted; hereafter the Secretary will send blanks to those who intend to exchange, that can be attached to each print at the edge or one corner, in such a way as to be easily removed and kept for reference. It is earnestly requested that these blanks may be filled as their value depends on the faithfulness with which this is done.

As landscapes are in the majority, we will notice them first, and in our opinion that of

No. 485.—A Neal, Colorado, "Oil Well Derrick," is entitled to the first place. The derrick with its attendant machinery, the gap in the hills of the middle distance giving us a glimpse of the exterior distance with delicate indication of clouds in the sky, and with not a trace of halation, form a beautiful picture that could only have been brought out from a well-timed negative by careful development and first-class printing.

No. 495.—Miss Lucy D. Baldwin sends a first-class picture of "Roanake Valley, Va.," looking south—wonderfully sharp and clear, full of detail, giving a broad veiw of the city in the foreground and the picturesque hills in the distance.

No. 474.—Miss Stella Trueman has a small but vigorous picture, apparently an old ruined mill. Artistically and technically it is almost perfect; The only thing wanting is a little more sky to balance the foreground.

No. 225.—H. Macy gives us an excellent instantaneous 5 x 8 "Landscape, with Cattle." The natural grouping of the cattle could hardly be improved; the landscape is unusually sharp for an instantaneous exposure. It is well printed on the Bradfisch aristo paper.

No. 587.—W. F. G. Geisse, "Pelham Manor, N. Y.," has another well-taken landscape, giving a view of the Manor House and its surrounding grounds, with a young haymaker in the foreground. Well printed on albumen paper from a Carbutt ortho. negative.

No 38.—Mrs. L. H. Mull's "In the Woods" is not quite up to her usual high standard; it lacks strength—would be better with slow printing on aristo paper—evidently over-exposed.

No. 32.—Miss Ella Switzer; an "Old-Fashioned Garden," is a picturesque, well chosen subject; its only fault is a little too much intensity.

No. 557.—J. S. Carpenter, makes it evident that he knows how to choose a subject, and the point of view from which to take it. With a little more intensity and a little less halation "Rip. Rocky Fork" would have been all that could be desired.

No. 195.—Percy Wells, "Near Chautauqua" is a very much overtoned print from a very good negative. Like No. 557 he has shown good taste and judgment in selecting his subject and point of view.

No. 541.—Henry E. Canfield, "P. A. & W. R.R. Bridge, Akron, Ohio," for obvious reasons this picture will be left to the criticism of the club.

No. 221.—Mrs. C. L. Pierce easily heads the list of still-life pictures with her exquisite "Summer Roses." It is in this class of work that the photographer's artistic taste has the best opportunity to manifest itself and Mrs. Pierce has shown in this picture what can be done by a fine arrangement of flowers in and around a vase, with a background nicely arranged to harmonize with it.

No. 281.—R. H. Scadin, "Lilies as they grow," is in Mr. Scadin's usual style, which is always good. The contrast of the pure white of the lilies with the dark back-ground, requires very great skill to bring out detail properly, but Mr. Scadin has succeeded admirably.

No. 519.—Miss Ella D. Moore, "Laurel Blossoms," very tastily arranged in a glass jar, but the effect would have been better had the jar not been so near the color of the back-ground—a good negative and well printed.

No. 152.—Miss E. E. White sends a picture of a violin, bow, rack and music book, arranged on a table covered with a dark-figured cloth. The book is too light and the balance of the picture too dark. It is a very difficult combination to manage.

We hope in our next November exchange to see that some one or more will have the courage to try portrait and *genre* work.

Henry E. Canfield.

Answers to Questions.

No. 523.—What is the difference between sulphite of sodium and hyposulphite of sodium. Both these substances are very much alike in ap-

pearance, what are their individual properties, photographically speaking?

Answer.—Sulphite is a compound of sulphurous acid with sodium oxide, and hyposulphite is composed of an acid not quite sulphurous and the same basis. Sulphites are used to preserve organic developing agents when in solution; hyposulphites are so-called fixing agents and dissolve from plates or printing paper the iodides, bromides, or chlorides of silver not acted upon by light. To learn of the properties of photographic chemicals, we advise you to join the advanced class, which you, a graduate, have a perfect right to do.

No. 529.—Will you kindly give me your latest experience with the combined toning and fixing bath for aristo paper?

Answer.—See our article on the subject, THE PHOTOGRAPHIC TIMES, September 2d, page 447.

No. 214.—What is the correct distance between the two objectives for making stereoscopic pictures?

Answer.—For near objects the distance should not exceed 2⅝ inches; for far-off objects the limit is 3¼ inches. Beyond that the effect will be very much exaggerated.

No. 72—Asks a great many questions relating to the combined toning and fixing bath.

Answer.—We refer our fair friend to the literature of the day, and especially to our own article on page 447 of THE PHOTOGRAPHIC TIMES, present volume.

No. 603.—What must I do to join the C. P. E. C., and what benefits may I have by doing so?

Answer.—All students and graduates of the school are admitted on paying the annual dues of 50 cents. The Secretary, Mrs. C. L. Pierce, Elmhurst, Riverside, Conn., will give detailed information when applied for.

No. 550.—Is it necessary to back up Carbutt's gelatino-albumen plates with opaque color when making lantern slides in the camera?

Answer.—We never found it necessary to do so.

No. 353.—Asks several questions in regard to toning and fixing in one solution.

Answer.—To counteract the large amount of chloride of silver taken up by the bath when repeatedly used it is advisable to add a little fresh hypo solution every time after it has been used, and furthermore we recommend to pass the print through a 5 per cent. solution of hypo not immediately after it has passed through the toning bath, but after it has been washed in *running* water for at least five minutes. Omega and all kinds of aristo paper, when treated in this manner, will probably not fade or turn yellow.

No. 119.—Has tried Willis & Clemens' platinum paper, purchased from his local dealer, but cannot get the whites clear and pure. In other respects it works well.

Answer.—We advise to get the paper direct from the manufacturers, and get it as fresh as possible. And then you must remember platinum paper must be kept in an absolutely dry place.

No. 631.—How were these beautifully brown-toned lantern slides made, you exhibited on the night of the feast of lanterns?

Answer.—They were ordinary lantern slides developed with para-amidophenol or with eikoquinol, and finally toned with uranium nitrate and ferricyanide of potassium. The formula and *modus operandi* is as follows: The slide is developed but slightly as the subsequent treatment intensifies as well as tones. Exposure must be full, not under. After fixing and washing immerse the plate for two or three minutes in a 1 per cent. solution of uranium nitrate, and add an equal volume of a 3 per cent. solution of ferricyanide of potassium, to each ounce of which are added 30 drops of glacial acetic acid. On the addition of the second solution toning commences at once, and the plate may be left in the bath till the desired color is attained.

The transparent portions of the slide will be at first of yellow color, but copious washing in pure water removes it, and leaves the silver deposit of the tone you so much admire.

No. 508.—Do you still recommend the eikoquinal developer demonstrated to the practising class of 1891 or do you prefer for the making of lantern slides the Para-amidophenol so much spoken of lately?

Answer.—For lantern slides by contact printing, or when made in the camera no better developer than the para-amidophenol (PHOTOGRAPHIC TIMES formula) can be recommended. We caution you however against the use of certain patent nostra, no matter under what name they are sold, they give but rarely desired results. Our own compound is highly spoken of by expert photographers.

Eikoquinal is and always will be an excellent developer for all kinds of work; we have not entirely discarded it.

Many "Pictures Received" will be considered in the November number of the Supplement.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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Seventh.—Because you reach a class of buyers in it, not obtained through any other medium.

Eighth.—Because it is not read and then thrown away, but is preserved and bound, on account of its beautiful illustrations and original information.

Ninth.—Because it contains every week more original information prepared especially for its columns than any other photographic magazine.

Tenth.—Because its circulation is not local or limited, as it extends throughout the entire United States, and goes to both professionals and amateurs.

Eleventh.—Because it circulates not only in this country, but also in Europe and on the Continent.

Twelfth.—Because its pages are double the ordinary quarto size.

Thirteenth.—Because its rates are lower than any photographic publication, considering the size of page and the extent of circulation.

Fourteenth.—Because your advertisement will receive the best of treatment on the part of the compositor, and will be advantageously placed in its pages.

Fifteenth.—Because all its advertisers are endorsed by the publishers as being worthy of patronage.

Sixteenth.—Because no advertisement in any way objectionable is admitted to its pages.

Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

Commercial Intelligence.

Film Workers.—We call your attention to the announcement of the Blair Camera Co., on another page, which deserves the careful reading of all who use films.

The Bull's Eye.—The Boston Camera Mfg. Co. announce their excellent "Bulls-Eye" Camera on another page of this issue. This convenient day-light camera is making friends wherever it is shown.

Messrs. Butts & Adams, the new photographic firm of Buffalo, report that they are doing an excellent business, not only in the city of Buffalo, but also in other parts of the country.

The Queen City Camera Box which David Tucker the reliable photographic merchant of Buffalo, is offering at $5.00, is meeting with a very large sale.

"The American Annual of Photography and Photographic Times Annual" for 1893, is now in press, and will be ready as announced by December 1st, in ample time for the holiday trade. Nearly the entire edition of 18,000 copies has already been sold. Those who want the book as soon as it is ready, should place their orders with the publishers now.

"The Chemistry of Photography," by W. Jerome Harrison, which is now in the press of The Scovill & Adams Co., will soon be ready. It will be No. 41 of The Scovill Photographic Series.

Our Advertisements.—We call the attention of our readers to the new advertisements which appear from week to week in our advertising pages. The pages should be examined every week as carefully as the reading pages, as they are of great importance to the photographer, announcing as they do, the latest improvements in photographic apparatus and all new goods.

Business Notices.

FOR SALE.—A No. 1 Kodak, entirely new, "Sealed" and *unsoiled*, just as it came from the Eastman Co., and includes book, nice new leather strap, crrrying case, everything. Address "KODAK,"
481 Canal St., New York City.

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FIRST-CLASS RETOUCHING for the trade and amateurs. MISS D. M. SNYDER,
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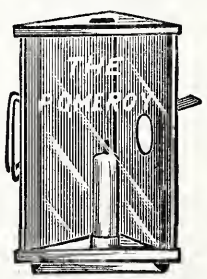
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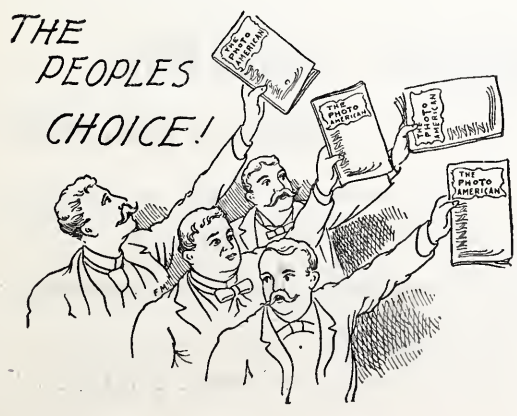
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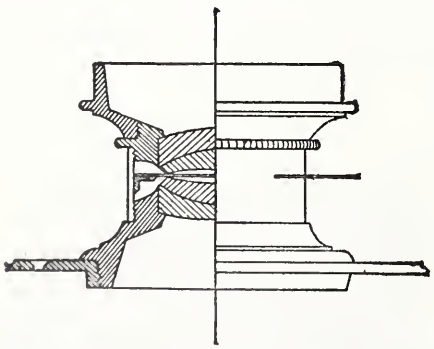
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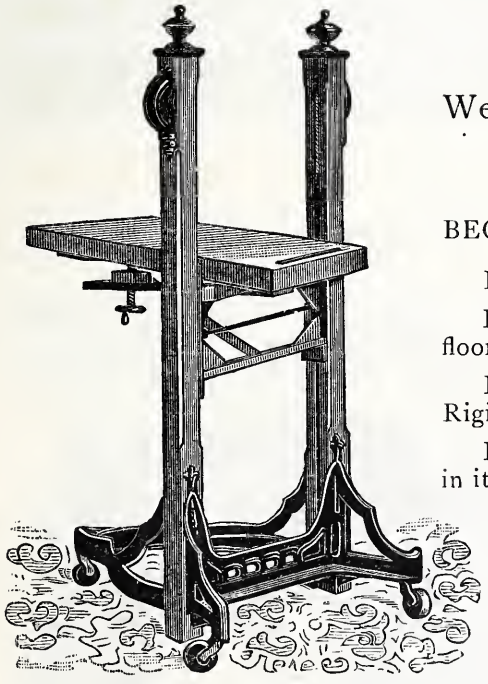
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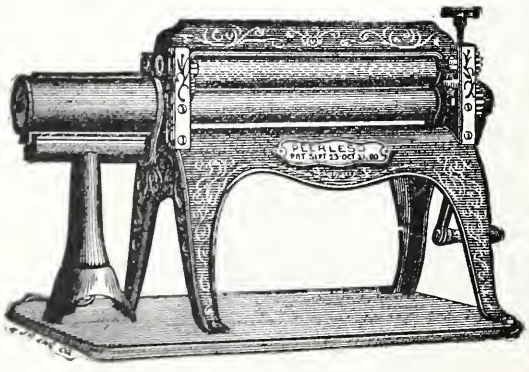
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A. M. Collins
Manufacturing Company

would call attention to Dealers in Photographic Supplies to their superior facilities for the manufacture and distribution of Photographic Cards, claiming that they have always in stock, or are prepared to make promptly to order, a greater variety and much larger quantity of Cards of superior quality than any other establishment in this or, perhaps, any other country.

Warehouse, No. 527 Arch Street,
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NEW "PEERLESS" BURNISHER.



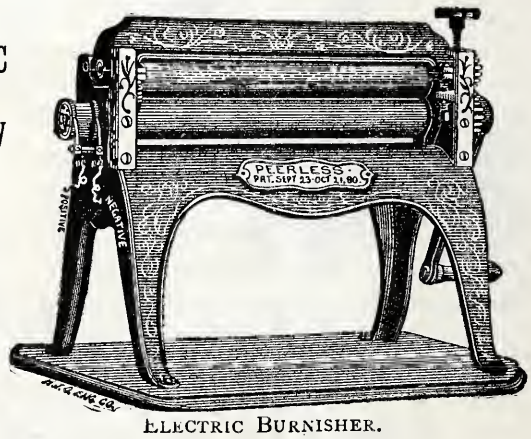
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OLEUM and ELECTRIC

Rotary and Stationary

HEATED BY
OIL, GAS, or ELECTRICITY.

25 POINTS OF SUPERIORITY.



Electric Burnisher.

QUICKEST AND MOST UNIFORM HEAT OBTAINED.

These machines are the latest inventions of our Mr. W. H. Boles, the inventor of the well-known Acme Burnisher.

For Aristo Paper our machines cannot be equalled.

Don't buy until you have examined the **merits** of the **Peerless.**

ASK YOUR DEALER FOR IT.

Send for Illustrated and Descriptive Circular and Price List.

THE PEERLESS BURNISHER CO.,
Syracuse, N. Y., U. S. A.

Harvard DRY PLATE

RAPID, CLEAN, CLEAR, BRILLIANT.

EASY MANIPULATION,
FREEDOM FROM FRILLING,
STRUCTURELESS FILM.

HARVARD DRY PLATE CO.
MAIN 25 STREET,
CAMBRIDGE,
MASS.

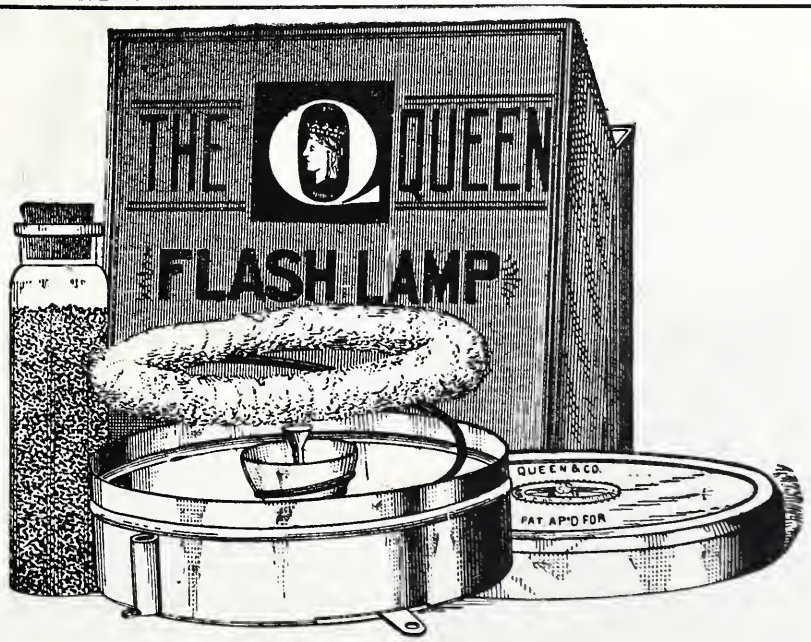
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THE SCOVILL & ADAMS COMPANY.

QUEEN'S FLASH LAMPS

THE ONLY ENTIRELY SATISFACTORY FLASH LIGHT APPARATUS IN EXISTENCE.

Mailed to any address upon receipt of $1.50.



$1.50

STATISTICS:

Depth 1¼ inches
Diameter 4 "
Weight 4 ounces.

Charge (small) 20 Gr., (costs about 1½ cents.)
" (large) 30 Gr., " 2 "

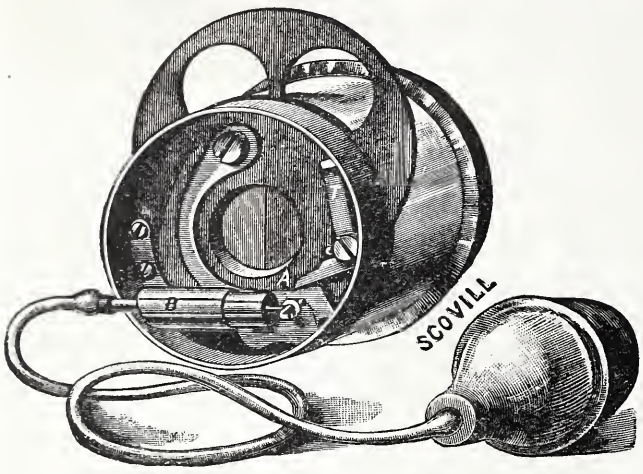
Size of room effectively lit when good lenses are used, about 25 x 30 ft.
Size of room effectively lit when cheap lenses are used. about 16 x 20 ft.

Time consumed in getting the lamp ready for discharge, 1½ minutes.

Jas. W. Queen & Co., Phila

The Elite Shutter.

For Timed or Instantaneous Exposures.



This economical shutter was especially designed for use with Waterbury Lens.

DIRECTIONS FOR USE:

To set the shutter for snap work, push the point A as close to the piston B as it will go. Push arm T as close to the edge of the lens as possible. The shutter is now set for quick work. When ready to expose, give a hard, quick squeeze on the bulb.

FOR TIME EXPOSURE:

Press arm T as close to centre of lens as it will go. Push the point A close to the piston B. For exposure, squeeze and hold the bulb, which will open the shutter; when the time of exposure is up, release the pressure upon the bulb and the shutter will close.

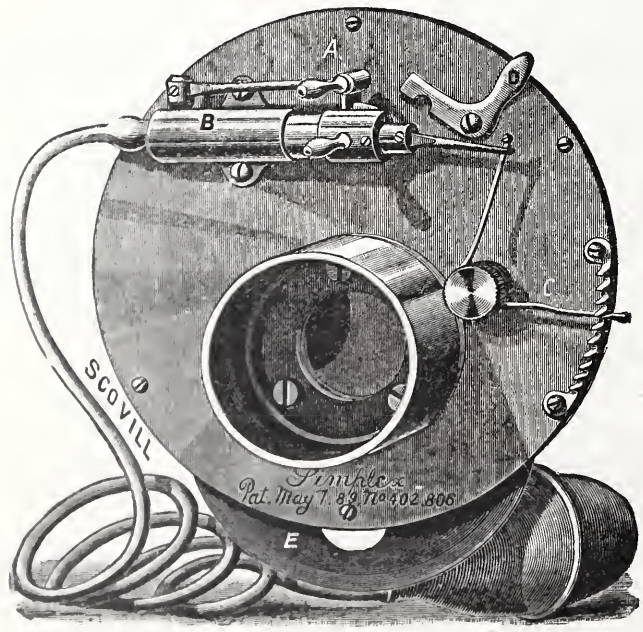
PRICE, $3.50.

Fitting to Lens, = = 50 Cents.

THE SCOVILL & ADAMS CO.,

423 BROOME STREET, NEW YORK CITY.

THE SIMPLEX SHUTTER.



This excellent and new shutter will at once commend itself to all users of the Camera.

It is operated as follows:

TO SET THE SHUTTER FOR QUICK WORK:

Raise knob A, press back knob B, which is attached to the piston. Drop knob A so as to catch and hold this piston. Press down arm D towards the right, until its other end is free from the piston B. Regulate the speed for shutter by placing spring C into any notch which will give the speed required; when ready, press the bulb, and the exposure is made.

FOR TIME EXPOSURES:

Raise knob A, press back knob B as far as it will go, drop knob A in order to hold the piston. To the left, push lever arm D as far as it will go, there release spring C from the notches. When ready for an exposure, press the bulb and hold it pressed as long as the exposure is required, then release it, when the shutter will close.

The shutter is provided with rotary stops (E) whose diameters are 1 in., $\frac{5}{8}$ in. and $\frac{2}{8}$ in.

PRICE, $13.50, NET CASH.

THE SCOVILL & ADAMS CO.,

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TRADE BULL'S-EYE MARK CAMERA

A Perfectly made, film-roll camera, making 3½ in. round or square pictures, for $7 [ebonite] or $8 [leather].

No Dark-room required to load or unload. Uses "LIGHT-PROOF FILM CARTRIDGES" which can be inserted and removed anywhere. Each cartridge makes 12 exposures.

Beautiful Results. Simplicity of operation and GOOD FILM insure satisfactory results to the inexperienced, while the fine quality of the negatives astonishes old photographers.

Everybody should have one. No matter if you have a dozen other cameras The Bulls-Eye is the latest wonder and just the thing for *Lantern Slides*, or to slip in your grip-sack when travelling.



Size, 5¼ x 4¼ x 4¼ inches.



BOSTON CAMERA M'F'G CO.,

380 Tremont St., BOSTON, MASS.

Edwards's Special Transparency Plates.

For LANTERN SLIDES, Window Transparencies, and Reproductions in Black-and-White.

These Plates make the most perfect Lantern Slides, either by contact printing by artificial light or by means of the camera from larger or smaller negatives and give, at will, either engraving black or rich warm purple tones; they are also specially suitable for reproductions of line subjects for photo-lithography, when used for this purpose with our improved Pyro Transparency Developer, they give any desired density with perfectly bare glass in the high lights.

Price, 3¼x3¼ (English Lantern Size), 75 cts. per doz.

Edwards's Special Pyro Transparency Developer.

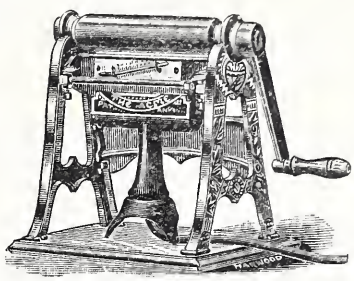
For Lantern Slides and Transparencies.

By means of this new Developer the most perfect Transparencies can be obtained on suitable Dry Plates with the greatest facility. It is the only Developer yet discovered which will produce (on Rapid Gelatine Plates) Lantern Slides of the highest class with RICH WARM TONES and perfectly clear glass in the highest lights.

Price, Two 8-oz. Bottles in Case, $1.50.

B. J. EDWARDS & CO., Manufacturers.

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PATENT APPLIED FOR.

Acme Amateur Rotary Burnisher.

NOTE.

Quickest Heater in the world.
Saves seventy-five per cent. of gas, oil or alcohol.
No sweat, no smoke, no smell.
Acme Horizontal Thermometer attached.
No blistered prints, uniform results.
Will burnish an 8 x 10 and all sizes under.
Simplest Rotary Burnisher ever made.
One-hand wheel adjustment.
Full Nickel Finish.
Guaranteed in every particular.

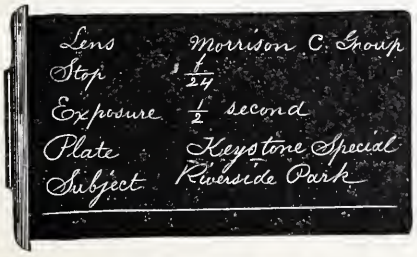
PRICE, OIL, GAS, OR ALCOHOL, $15.00.

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REGISTERING SLIDES.

(PATENTED.)

In the pleasure or excitement attendant upon picture-taking, holders slides have been so changed about that the note-book afforded no clue to their identity. All photographers, whether professional or amateur, who have in time past puzzled their brains in the endeavor to solve such vexatious questions as these—

"Have I or have I not exposed that plate?"
"If exposed, was the plate used for that prized picture?"
"Shall I incur the risk of making a double exposure?"

henceforth will have themselves only to find fault with if they do not procure and use in their dry-plate holders the patent registering slides, or as they have been called "Record Slides." These can be written upon with slate or lead pencil *ad libitum*, and the writing erased without injury to them.

Registering Slides *will be supplied with new American Optical Co.'s Dry Plate Cameras and Amateur Outfits up to* 10x12 *size without addition to price list.*

JAMES SWIFT & SON'S

(LONDON, ENGLAND)

PARAGON LENSES.

We take great pleasure in announcing to American Photographers that henceforth we shall be enabled to supply them with JAMES SWIFT & SON'S PARAGON LENSES.

The reputation of these Lenses abroad is superior to that of any other make. They have been selected by the following named institutions because of their unequaled qualities and excellence.

The Scientific Department of the English Government in England, Calcutta and Bengal.

The Universities of Oxford and Cambridge, King's College and Edinburgh University College Schools.

Owens College, Manchester, besides the Governments of France, Germany and Italy.

The SWIFT LENSES have been awarded no less than seven gold medals, besides numerous diplomas of honor.

They are manufactured from the new ABBE-SCHOTT glass, which is undoubtedly more uniform in quality and specific gravity than the best optical flint and crown glass heretofore made ; hence the lenses are of a uniformly superior quality.

The Rapid and Portable Paragon Lenses

Are supplied with Iris Diaphragms and mounted in brass as well as aluminum; while the WIDE-ANGLE PARAGON LENSES are fitted Revolving Diaphragms.

THE SCOVILL & ADAMS CO.,

SOLE AGENTS IN AMERICA,

423 BROOME STREET, NEW YORK.

Catalogues of SWIFT LENSES supplied free on application.

An Indication of Superiority.

The great superiority of **BLAIR'S FILM** is conceded by all who have tried it, and we presume it is due to this that other manufacturers have enlarged the size of their spools so that the hollow tubes on which Blair's Films are wound will not fit over them.

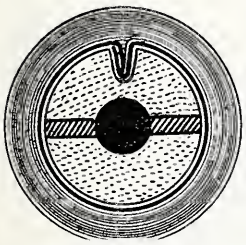
As a corresponding change in our tubes would doubtless result in another change in the spools referred to, we will only say that we do not believe the public can be forced to use any goods against its will, and suggest that the seeming difficulty may be overcome by securing an old empty spool which can be obtained from any dealer, or turning down a new one.

BLAIR'S FILMS are actually CLEAN, QUICK and RELIABLE, have no joints or seams, will never frill, and give uniformly good results. *CAN THIS BE SAID OF OTHERS?*

THE BLAIR CAMERA CO., Manufacturers,

BOSTON, NEW YORK. PHILADELPHIA. CHICAGO.

E. & H. T. ANTHONY & CO., Trade Agents,
NEW YORK CITY.



Our tubes are all ¾ inch inside diameter, and designed to slip over wood spools as shown in illustration.

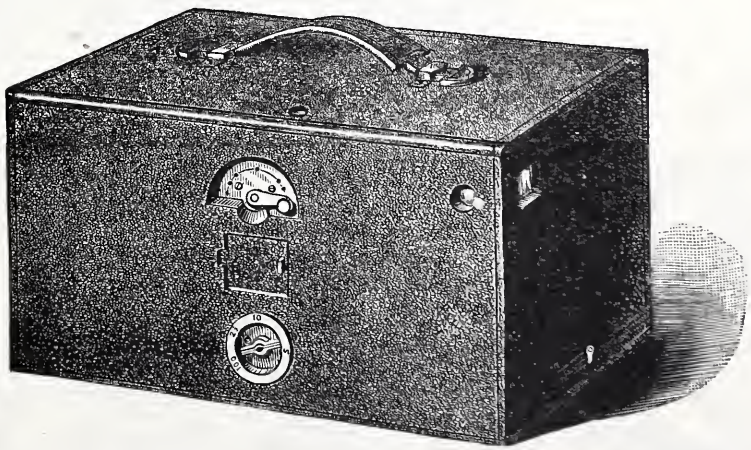
The Bristol

A NEW MAGAZINE CAMERA,

CARRYING TWENTY-FOUR 3¼ x 4¼ FILMS.

(Just the thing for LANTERN SLIDES.)

The Handiest Simplest Most Effective



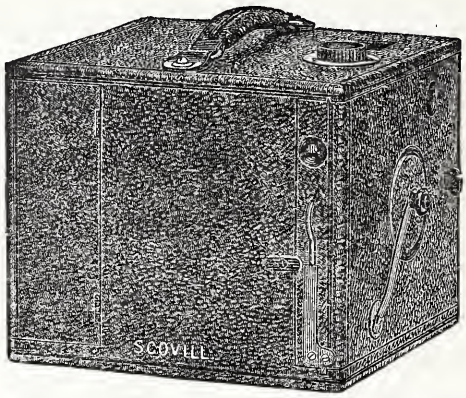
Hand Camera Yet Introduced

VERY COMPACT AND EASY TO WORK.——AN EXCELLENT LENS.

Send for a copy of "THE BRISTOL" Manual, which is fully illustrated, and perfectly describes this unique Camera.

THE SCOVILL & ADAMS COMPANY, Manufacturers.

THE WATERBURY DETECTIVE CAMERAS.



MANUFACTURED BY THE AMERICAN OPTICAL CO.

Timed and Instantaneous Photographs. This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size, It is

The only Detective Camera made for plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

The Recessed Finder shows *the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

The Focusing Scale is beside the Finder, where it may be readily seen and adjusted.

Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders	$25 00
5 x 7 Waterbury Detective Camera, with 2 Double Holders...	40 00

FOR SALE BY ALL DEALERS.



AMATEURS, ATTENTION!



Please remember that in speed and every desirable optical quality no lenses yet constructed can rival

Voigtländer's Euryscope Lenses,

which are made in SEVEN different styles.

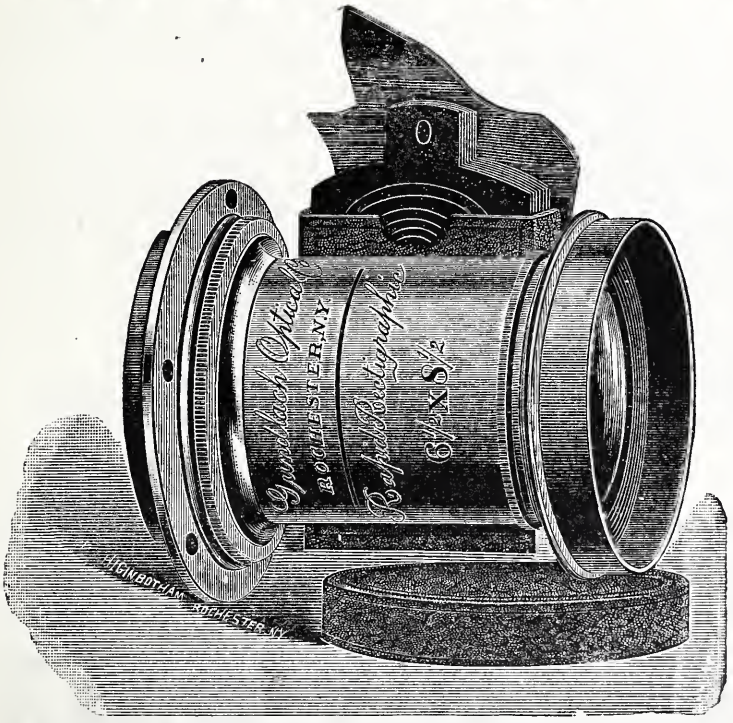
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Revised price-List sent on application.

Correspondence solicited.

GREAT IMPROVEMENTS IN GUNDLACH LENSES.



The *RECTIGRAPHIC* and the *PERIGRAPHIC* are now composed of

TWO APLANATIC TRIPLETS

of a novel form, producing a degree of *Optical Superiority* and *Flatness of Field* which has not been attained heretofore in Photographic Lenses.

The Triplets are of different focal power, and, being perfectly aplanatic, they produce perfect pictures by themselves. Thus the new lenses actually consist of three objectives, which produce images differing in size as 2 to 3 to 4.

Send for descriptive catalogue to the

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(VORM. E. SCHERING) BERLIN.

E. SCHERING, BERLIN. TRADE-MARK. REGISTERED.

PYROGALLIC ACID
RESUBLIMED
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SEE THAT YOU GET THE "GENUINE SCHERING'S."

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What is the Latest in Photography?

HAVE YOU SEEN IT?

IF NOT, IT IS



A MAT-SURFACE PAPER, having no gelatine used whatever. Prints in the sun until the deep shadows appear; then is developed, washed and fixed. The prints have much the same appearance of platinum, and the tone can be regulated from a brown to black.

Full instructions come with each package, and from the ease in which it is worked, prints can be made by the amateur or professional alike without previous instruction.

Paper does not deteriorate with age. Solution put up in 10-ounce and 16-ounce bottles for immediate use, at 30 and 50 cents per bottle.

Parties trying "Vici" will be favorably surprised, as it is something entirely new, and should not be likened to the mat papers at present on the market.

THE C. E. HOPKINS CO,

Manufacturers of Photographic Sensitized Papers,

16-24 Division Street, Brooklyn.

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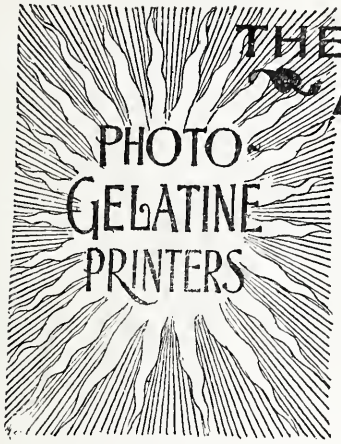


In ordering our paper from Dealers and Photographic Stock Houses, are advised to order by the name of **OMEGA**, not Aristo or Aristotype, as other brands are then frequently substituted.

There are other papers now manufactured which are claimed by interested parties to be the same or like our paper.

This may apply to Gelatine Papers in general, but we claim for our product characteristics which no other paper possesses, and we advise all to specify **OMEGA** and accept no substitution.

NOTE. { Our reduction in Prices.
{ Our Paper now gives white high lights and will not yellow in Toning.



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67 & 69 SPRING ST., NEW YORK.

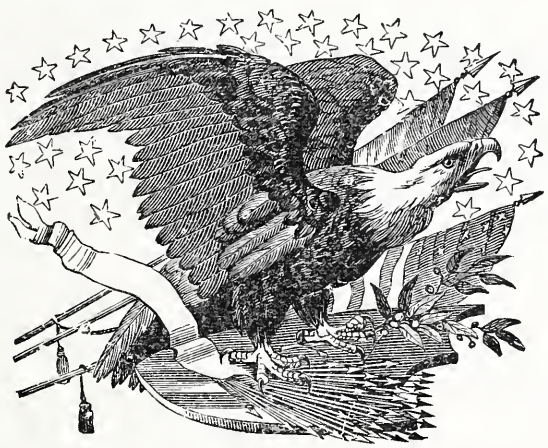
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Are the first in rank and proclaimed by the highest authority and our best amateurs as a plate the EQUAL of which has as yet NOT been before our Profession.



The results obtained by some of our professional and amateur friends are simply wonderful.

WUESTNER'S REGULARS are unsurpassed.

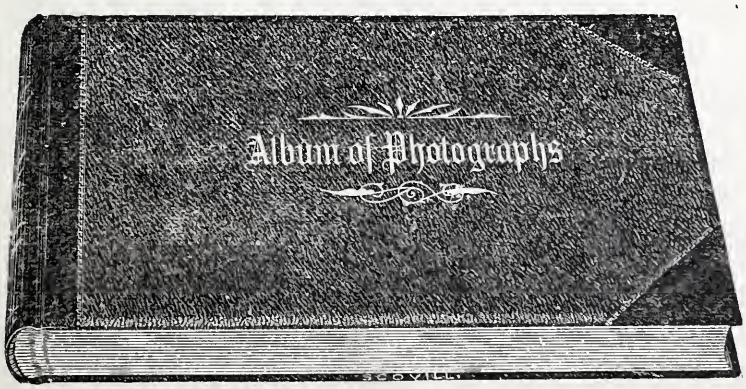
The First Prizes at our latest Conventions—Boston, Washington and Buffalo—were carried off by photographers using our plates.

Ever since the Plates have been on the market they have held their reputation as being the leaders.

FOR SALE BY ALL DEALERS.

Wuestner's New Eagle Dry Plate Works,

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ALBUMS FOR PHOTOGRAPHS.

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Is absolutely the BEST.

WHY?

Because none but the Best of the Rives Paper is selected for Albumenizing the THREE CROWN BRAND.

It is therefore free from the imperfections often to be found in other brands, which arise from imperfections in the plain paper and cannot thus be avoided.

Look out
for
imitations
of

WATERBURY CARDBOARD.



Look out
for the
genuine, too,
and see
that you
get it.

It is

the Best

and Cheapest.

The Photographic Appetite increases by what it feeds on. The beginner is usually content to start with a modest outfit, but as interest grows the hunger for more artistic results calls for better facilities so that the apparatus must constantly be of a more improved pattern and contain all the latest fixings, till finally the question of improvement is entirely one of the value of the lens.

To suit this growing appetite we make a line of camera boxes unequalled for workmanship and convenient appliances. We can supply any stage of hunger and make to order to suit any whim. Any photographic question cheerfully answered. Send for our Catalogue.

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The Advill, $20.

The Waterbury, $25.

The Bristol, $30.

The Triad, $35.

The Henry Clay, $55.

Stereoscopic, (Henry Clay) $75.

The Scovill & Adams Co.,

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Eastman's

Solio Paper.

NOTHING SUCCEEDS LIKE SOLIO.

These Men Tried It.

They Succeeded.

See What They Say.

1440, Broadway, New York, Sept. 14, 1892.

Eastman Kodak Co.,
Rochester, N. Y.

Gentlemen:—I tried some of your Solio paper and send you proofs from untouched negatives. I find that **we do not have to make the negatives to suit the paper** as is the case with the other brands of ready sensitized paper in the market. * * * * * * * * * * *

Please send 10 gross Solio paper, cabinet size.

Yours truly,
GEO. G. ROCKWOOD.

Adrian, Mich., August, 1892.

Eastman Kodak Co.,

Gents:—I am using the Solio paper and am so well pleased with it that I intend to drop all other papers. * * * * For tone and vigor the Solio is best of all, and for ease of working, it's "out of sight."

O. D. FAIRBANKS.

Varney's Studio, 3915 Cottage Grove Ave.,
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Eastman Kodak Co.,
Rochester, N. Y.,

Gentlemen:—Kindly send me at once 24 gross Solio (4 x 6), and from now on, 12 gross per week. Duplicate my order for larger sizes and ship as early as possible. The paper is giving great satisfaction. Have made about 4,000 prints this week with beautiful results and scarcely any waste.

Respectfully,
G. W. VARNEY.

These are but fair samples of scores of testimonials which we receive from all over the country.

Send 10 cents for sample package and print, cabinet size.

Eastman Kodak Co.,

ROCHESTER, N. Y.

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AND

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A WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

ILLUSTRATED

NEW YORK.

THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION.

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An Indication of Superiority.

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THE BLAIR CAMERA CO., Manufacturers,

BOSTON, NEW YORK. PHILADELPHIA. CHICAGO.

E. & H. T. ANTHONY & CO., Trade Agents,

NEW YORK CITY.



Our tubes are all ¾ inch inside diameter, and designed to slip over wood spools as shown in illustration.

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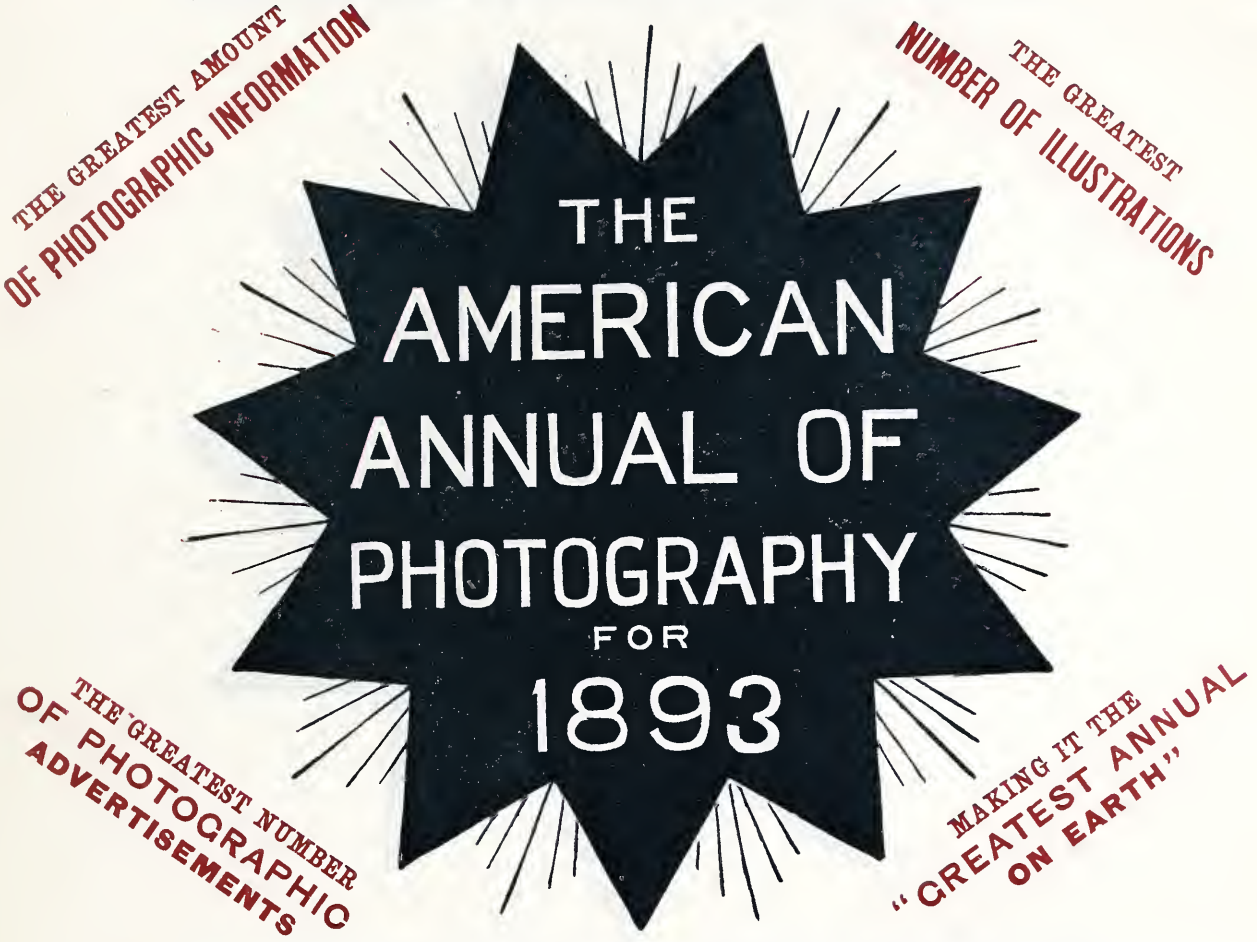
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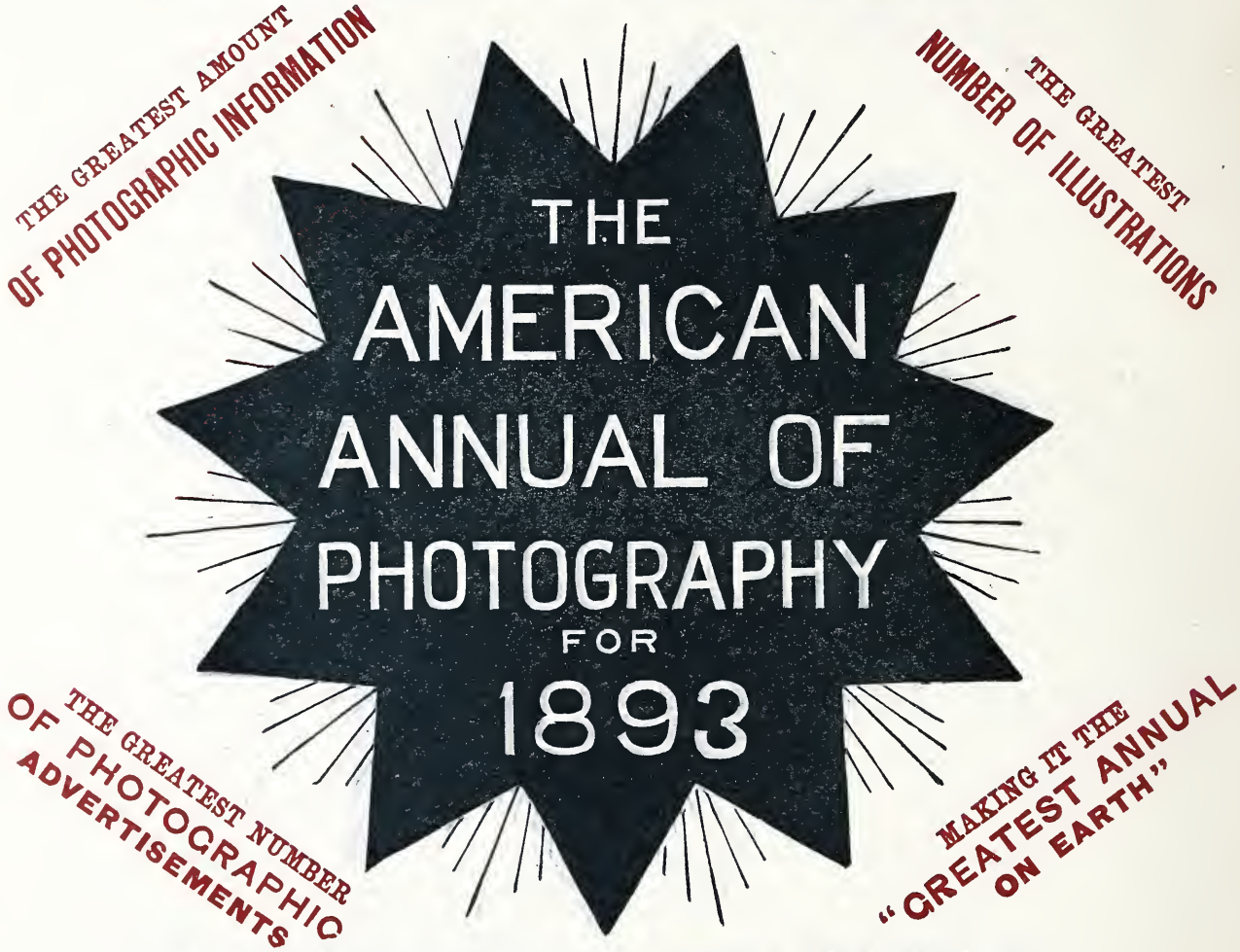
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Photographic Times[illegible]



Portrait of a Lady

THE PHOTOGRAPHIC TIMES.

VOL. XXII. NOVEMBER 4, 1892. NO. 581.

PORTRAIT OF A LADY.

WE present our readers this week with another portrait by Mr. E. Decker, of Cleveland, Ohio. The photogravure having been reproduced from a print and not from a negative, shows some technical imperfections in the impression which would otherwise not exist. But the beauty of the composition and the light effect is all preserved to delight the beholder, and give us an example of what we should strive to obtain in our portrait work. A few weeks ago we presented our readers with an example of high class portrait work, by a prominent amateur. In this issue, we give them an excellent specimen of professional portraiture by one of our leaders in the art.

PHOTOGRAPHY AT THE WORLD'S FAIR.

WE have received the following letter from Mr. C. D. Arnold, in regard to photographing in the Columbian World's Fair:

"Hand cameras using plates up to and including 4 x 5 inches, without tripods, will be allowed within the grounds of the World's Columbian Exposition on and after this date, on payment of a fee of two dollars in addition to the regular price of admission for each day.

"Cameras using stereoscopic lenses will not be admitted, however small the plates may be.

"*C. D. Arnold, Official Photographer.*

"CHICAGO, Oct. 25, 1892."

WE HAVE RECEIVED the sad intelligence of the death of Mr. J. J. Wolfe, which occurred at Fort Wayne, Ind., on the 11th inst. Mr. J. J. Wolfe was a fine photographer and was located at Lancaster, Ohio, for a good number of years. His health having been poor for over a year, he thought a change would do him good, and for that reason sold out and removed to Fort Wayne. His prospects at the latter place were very bright, but the grim reaper removed him from our midst.

Our heartfelt sympathies are extended to the bereaved family and brothers, who have lost what was very dear to them, and to his many friends also, who will be deeply grieved to hear the sad news.

REVERSAL OF THE IMAGE WITH PARA-AMIDOPHENOL DEVELOPER.

OF all that has been told, true or otherwise, of para-amidophenol and its variously compounded developing solutions, a very peculiar property seems to have escaped the attention of most observers, for we find mention made of it but once, in Charles Scolik's *Photographische Rundschau*. We refer to its tendency to reverse the image. Before reading the above article we had made similar observations with our own compound, with that of the brothers Lumière, Dr. Eders, and with rodinal, of course without attributing, however, the effect distinctively to the developing agents, reversals coming then but rarely to our notice. The cause was simply thought to be the result of solarization, as might occur under any ordinary circumstances. With slow plates, lantern slides, or Carbutt's B., or the "Process," by the same maker, always distinguished by absolute clearness and good intensity, the phenomenon has never occurred, but with highly sensitive plates very frequently, and we know of a case of five plates out of a dozen had developed reversed pictures, or with a decided tendency toward it, while another dozen of the same emulsion, but developed with our own eikoquinol, resulted in clear and sufficiently dense negatives. As now, when para-amidophenol is sold in such enormous quantities, and used by so many amateurs, reversals are more frequently reported, one is very much inclined to consider it the cause.

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A precurser of reversals is the feeble and weak negatives that result from para developer, when the exposure has been excessive and the plate one of very high sensitiveness. The property of the substance to permit of shorter exposures than other agents seems to be not sufficiently estimated.

When the effect of over-exposure begins to show and large quantities of bromides are added to the solution, a reversal of the image is promoted as Mr. Burton said at one time, and owing to the superior force of the para, the solarized rapid plate in consequence, and injudicious development, there is no wonder when it occurs. Under these circumstances it would probably be better to restrain the development by other means, sodium citrate, borax or boric acid.

R. Robinson (page 141, "Mosaics" for 1888), explains the phenomenon as follows: "During a long exposure of gelatine emulsion plates to light, the bromide of silver acts upon the gelatine and produces peroxide of hydrogen, which is a substance possessing great oxidizing power. As this product is formed in greater abundance where the surface of the plate has received the most light, it there oxidizes the image, that is to say, the reduced argentic compound, and we have no longer an image suitable for development."

Victor Schuman relates a very remarkable instance of orthochromatic plates sensitized with cyanine, interesting enough to be repeated, although without direct bearing upon the present case (THE PHOTOGRAPHIC TIMES, Vol. XIX., page 329). After describing the fact, he says: "A long series of observations have led me to the following conclusions: A bromide of silver gelatine emulsion plate dyed with cyanine will always produce a negative by development, provided it is sufficiently protected from the action of light rays, emanating from the source by which the dark-room is illuminated. A ruby-glazed lamp does not afford sufficient protection. Cyanine plates are most sensitive to ruby rays, and, in fact, more so than to blue rays. With carefully filtering these rays, the light action ceases.

"A thoroughly developed negative, while still resting in the developer, and when brought near to the filtered light rays, or when exposed to them for a long time, will produce a fading of the developed parts and a slight fogging of the plate. The contrasts of brightness will vanish gradually, the plates assume a feeble character, and when viewing it by transmitted light it will be at once observed how distinctly the character of the image has changed from negative to positive."

The changing of the image in para-amidophenol developer is very much like that described by Schumann with cyanine plates, although the cause of it being evidently of different nature.

The fact that para-amidophenol in stronger solution, and especially so rodinal, tends towards a reversal of the image is not to be denied. The direct cause of the effect is not known as yet, but the phenomenon is interesting enough to subject it to exhaustive study.

COLLODIO-CHLORIDE EMULSION PAPER.

IN the *Deutsche Photo Zeitung*, Herr Vollenbruch publishes the following process for the preparation of the collodion paper, which is simply the enamelled (barita) paper coated with an emulsion of collodio-silver chloride.

The collodion emulsion contains the following ingredients:

Strontium chloride.....	4 grammes	=	61.7 grains
Lithium chloride.....	2 grammes	=	30.8 grains
Citric acid.	8 grammes	=	123.4 grains
Glycerine, pure.....12–14 c.c.		=	210 minims
Silver nitrate.....	28 grammes	=	432 grains
Ether. .....100 c.c.		=	27 fl. drachms
Alcohol.....100 c.c.		=	27 fl. drachms
Collodion at 3 of pyroxyline per cent.....800 c.c.		=	216 fl. drachms

It is prepared thus:

A.

Dissolve the silver in 130 minims of water, then add 13½ drachms of alcohol, and mix it to half the quantity of collodion (108 drachms).

B.

Dissolve the strontium and lithium chloride in 1½ drachm of water, add 6¾ drachms of alcohol, then a solution of the citric acid in 6¾ drachms of alcohol, and finally mix the whole to the remainder of collodion.

Now mix gradually, in shaking, meanwhile B to A, and when the emulsion is made, and the ether and the glycerine.

Let set for a few hours, filter, ready for use.

This quantity of emulsion suffices to coat from thirty to thirty-five sheets of paper, 19 x 23.

Herr Vollenbruch recommends the following toning bath:

A.

Ammonium sulphocyanide.....	7 grammes	=	108 grains
Water.....100	c.c.	=	27 fl. drachms

B.

Gold chloride.....	0.5 gramme	=	7½ grains
Water ... .150	c.c.	=	40½ drachms

For use, equal volumes. The bath keeps well.

Gelatine Emulsion for Opals.

The following is the process recommended by Dr. Eder. It is, of course, perfectly reliable, and may be employed for diapositives and also for coating enamelled paper. In the latter case it is advisable to add about 5 per cent. of glycerine in the finished emulsion:

Emulsion for Black Tones.

Ammonium bromide..... ..... 20 parts
Gelatine, hard..... ....50 to 80 parts
Water, rain or distilled... .....400 parts

Let the gelatine swell for twelve hours, then dissolve at the temperature of from 90 to 100 deg. Fahrenheit. Then in the dark-room add gradually, shaking violently after each addition, the following solution, heated at from 90 to 100 deg. Fahrenheit:

Silver nitrate..... 30 parts
Water .....400 parts

Let the emulsion stand for one hour at the above temperature, then pour it in a flat dish, and when it is set, proceed in the ordinary manner.

Emulsion for Brown Tones.

A.

Ammonium bromide..... 18 parts
Potassium iodide.....2 to 4 parts
Gelatine.....50 to 80 parts
Water, rain or distilled .....400 parts

B.

Silver nitrate..... 30 parts
Water ..... 400 parts

This emulsion is prepared as above explained.

It gives brown tones with ferrous oxalate.

If twenty parts of citric acid are added to it the tone is more brilliant.

If, instead of citric acid, four parts of aqueous ammonia are added, the tone is a darker brown.

Developers for White and Black Pictures and Diapositives.

1.—A.

Pyrogallol..... ..... 4 grains
Sodium sulphite.....20 grains
Potassium bromide..... 1 grain
Water.... .... 1 ounce

B.

Potassium carbonate.....10 grains
Water .... 1 ounce

Equal volumes.

2.—A.

Hydroquinone..... ... 6 grains
Sodium sulphite.....25 grains
Potassium bromide..... 1 grain
Water..... ... . 1 ounce

B.

Potassium carbonate.....20 grains
Water..... 2 drachms

Mix.

Pyro-Ammonia Developer.

At the South London Photographic Society Mr. Miller recommended the following pyro solution, which he had used for a long time in England and in Africa to develop plates from any maker:

A.—Sodium sulphite ..... 300 grains
Citric acid..... 20 grains
Pyrogallol ..... 100 grains
Distilled rain or boiled water..... 16 ounces

Dissolve in order.

B.—Potassium bromide .... 50 grains
Water..... 60 ounces

C.—Aqueous ammonia .788..... 2 drachms
Water..... 16 ounces

For normal exposure, take ½ ounce each of A and B. In another measure take half of C, adding it to A and B just before use.

For under-exposure use less of B and more of C.

For over-exposure, less of C and more of B.

In case of great contrast reduce the quantity of A.

Elimination of Hyposulphite.

A very expeditious manner of washing prints and of eliminating the last traces of hyposulphite is the following:

The print, fixed and washed for a few minutes, is laid face downwards on a smooth surface (a glass plate, a board), and, being covered with a thin oil-cloth, the water is squeezed out. It is then immersed in a dish of water for three or four minutes, and again the water is squeezed out in the same manner, and the print is again immersed in water. After repeating the operation in all four times, the print is immersed for a period of five minutes in a diluted solution of peroxide of hydrogen, 1 to 15 of water, and lastly rinsed in two or three changes of water.

HOW I MAY KNOW HOW LONG TO EXPOSE.

Amateurs are famous the world over. Some are famous for getting the thinnest negatives, and some for getting negatives so dense that when they should have created light, they have created darkness. As we cannot be famous in all things, let us rejoice we can be famous in some things, even in getting the worst negatives.

One of the most difficult things for an amateur

is to judge correctly of the intensity or volume of the light at all times and upon all occasions. I do not say what I am about to propose for judging the intensity of light, will enable one to tell with certainty how strong it is, but it will at least be an aid in estimating its power more correctly.

Light varies in intensity during the different hours of the day, even if the day remain throughout its entire length perfectly clear. It is strongest between the hours of 10 A. M. and 2 P. M.

In printing the amateur has noticed that early in the morning and toward the evening on a bright day it took much longer to print a proof than during the hours between 10 A M. and 2 P. M. Let the amateur take one of his thinnest negatives, one with considerable detail in it, I know he has several, and print a proof from it. He should take one, had it been a picture of an Albino, that will print a picture in about two minutes as dark as the complexion of a North American Indian. Let him print this in the sun between the hours of 10 A. M. and 2 P. M., and note the time it takes accurately. Let him print one between the hours of 8 A. M. and 9 A. M., and then between the hours of 4 P. M. and 6 P. M., and also note the time it takes. If it took two minutes in the first place, and six minutes in the second place, and ten minutes in the third place, the times are as 1, 3 and 5. Now let him select a negative that has been correctly exposed, one the amateur would call a "daisy." Suppose this one had been exposed between the hours of 10 A. M. and 2 P. M. Suppose two seconds' exposure had been given, and I want to expose between the hours of 8 A. M. and 9 A. M. and between the hours of 4 P. M. and 6 P. M. I now know from the time it took to make the print, pretty nearly how long to expose. If it took three times longer to print then I must give three times longer exposure.

It would be well to print on cloudy days and note the time it takes to print, and compare with the time of printing from the *same negative* and at the *same hours* with the times of printing upon bright days. In this way we will be better able to judge just how dark it is upon cloudy days. It is often darker than it seems. Then when there is a day we think is about the same degree of darkness as the day when we printed our proofs, we can make the exposure if we wish, and be much better able to judge the time required. I have had prints that it took all day to print—*i.e.*, took eight hours, when ordinarily I could get a print in five minutes. In other words, it took ninety-six times longer to print. Had I wished to have made an exposure upon that day and the light had remained constant during the day, I would have had to have made the exposure ninety-six times longer.

If one will observe in printing as above, one will be able to form tolerably correct estimates of the times of exposure for all hours of the day, for clear days and for cloudy days.

S. F. H. Hewit.

LONG DISTANCE PHOTOGRAPHY.

PHOTOGRAPHY at a distance, or tele-photography, to use a technical word, is taking photographs of objects at a long distance from the apparatus which for some reason cannot be approached with the ordinary objective and secure a distinct negative. If it is desired to photograph a person six feet high placed 325 feet from the camera with the usual objective, having eight inches focal length, the picture obtained would only be about three-sixteenth of an inch in height, which evidently is not large enough to show any detail. This shows the necessity of special arrangements to be able to photograph distant objects. The first mention of tele-objectives dates back thirty years, when photography was employed to secure exact and lasting views of astronomical phenomena.

A photograph of an eclipse of the sun on the 18th of July, 1860, was taken by Col. Lousedat and Mr. Warren. The latter especially, obtained an enlarged view of the sun four inches in diameter.

Professor Henry Morton in 1869 photographed the solar eclipse with an objective made by Mr. Zeutmeyer that gave an image of the sun measuring 2½ inches. The operators used the same method, an objective composed of a converging lens, the first image enlarged by another converging lens, or a second objective.

An apparatus of this kind is made by Mr. Jarret, Paris. It is an ordinary objective screwed upon a ratchet tube, which is attached to the camera. At the lower part of the tube is a third one which incloses the magnifying glass. This arrangement can be easily adapted to any kind of dark chamber. A very good photograph was taken of the Belledone mountains, near Grenoble, France, at a distance of ten miles, magnified 60 times.

But these kinds of objectives are very voluminous, and cannot be carried by travelling photographers. We mention it because it is the same kind used by Mr. M. Henry, at the Paris Observatory. Every one has heard of his magnificent photographs of the heavens.

Some months ago a patent was issued to Dr. Miethe, of Potsdam, Germany, for a new tele-

photographic objective in which this inconvenience is done away with, and photography at a distance is within the reach of all amateurs as well as professionals. The process is similar to that of Mr. Dallmeyer, of London, which, like the ordinary objective, has a primary converging lens, but in the place of forming a real image by this lens to be afterwards enlarged, Mr. Miethe interposes between the objective and its focus a double concave lens with short focus which changes the luminous rays before they reach the focus of the first. The separation of the two lenses is almost equal to the difference of focal length. The laws of optics show us that images are reversed when placed at long distances. It is besides the principle of the Gallien lens. The size of the image varies according to the position of the lens, and also depends upon their focal distances; if this is 25 to 1 the image will be twenty-five times larger than one taken by another camera and an ordinary objective. To take a clear picture the lens must be achromatic; these are difficulties easy to be solved. Photographs were taken by the ordinary objectives, and the Miethe apparatus at distances from 1100 feet to over 1½ miles; the images taken by the Miethe objective in both cases brought up everything in detail so that signs could be plainly read. The time of exposure is variable according to the nature of the apparatus. The time rapidly diminishes with the distance, and for objects, 1600, 3000 and 5000 feet distant, it takes from fifteen to twenty times that of an ordinary objective.

The Miethe apparatus, according to its inventor, can be made instantaneous as easily as with the ordinary apparatus. It is thought the apparatus will be valuable for military operations, astronomy, and balloon photography; metro-photography for prospectives and typographic or geometrical plans. Thanks to it, travellers and explorers can take a beautiful and exact picture of locations, animals far away, movements, etc.

The tele-objective opens an unlimited field for the amateur photographer, who is ever upon the alert to seize the prominent man of the day, the chief actress, interior views through half open windows; consent is no longer needed when a picture can be taken several hundred feet away, and the different poses of Madame ——— bathing in the surf can be instantaneously taken by an indiscreet photographer far away upon the beach.

Allen C. Knapp.

NOT UP TO IT.

"Come, take a drink."

"Photographic art hasn't got that far. I'm used only to taking pictures."

AMATEUR ICE-CUTTING.



IT is absurd to call such ice-cutting as we have on our ponds professional since it is usually done by some one's unemployed coachman or gardener in an easy way as time and opportunity serve and makes a sorry showing compared with the big ice-harvestings on the rivers. In Maine, the business is carried on with much machinery and the industrious boys who will be Presidents later earn considerable money as *scratchers* or *starters* on the long toboggan-like slides. With us, however, the small boy with skates in hand stands on the pond's edge to whine "Oh, say, you ain't agoin' to spoil our fun? I say, why don't you wait a bit till vacation is over? It is too mean to cut up the ice on Saturday."

To which lamentation the hired man, in our rural feudal phraseology known as Mr. Royce's John or Mrs. Fowler's Peter, as the case may be, answers after the free-born American manner. "Tell your pa to fill up his house with artificial ice and I will look about for another job than spoiling your skating."

We met a little fellow returning from some such fruitless quest when we approached the pond with our machines and learned from him where the men were at work. We knew them to be Widow Lea's coachman and Farmer Smith's two sons-in-law, and they knew us but made no low salaams at our approach. One may hear the nations praising one from afar, particularly the photographic nations and yet be of "no account nohow,' on that score at home.

"I don't want to get in the rogues' gallery this trip," one fellow called out good-naturedly, as we placed our tripods on the snow without asking leave or license. Life is too short for much palaver.

"Will the ice bear me?" asked Fragoletta, timidly.

"I reckon if you step soft, ma'am," was the rejoinder from a man weighing over 200 pounds if he weighed an ounce. Allowing his reply to pass muster for a specimen of the much vaunted national humor I turned my great mind to the subject in hand—or the object?—and looking wistfully at at the groups of men armed with spear and long

saw wondered whether I had better get them on a plate rather than a view of the pond in whose clear water the cut off blocks crystal clear were sailing. The day was bright and sunny with a foretaste of Spring in the March air.

"It is not such cold work," said Fragoletta, as she stood wrapped from head to heels in furs and veiled from every possible zephyr by a thick lace scarf. She had but just stepped from the warm robes of a luxuriously appointed sleigh, but an ice-cutter wiping the sweat from his brow, answered without sarcasm and without his coat. "No, Miss, it is too hot for comfort and far wholesomer when a man can work without getting all of a drip."

We looked our sympathy at the poor "frilled" lad—this is a well-worn photographic joke of ours which we give to THE TIMES without extra charge



—and then hurried to take something. We are always in a hurry, no matter if we rise at sunrise and set at sunset. I do not mean our views are under-exposed, rather the reverse, for in the present instance Fragoletta took several without drawing her slides, and if she had only remembered not to develop them nothing would have been lost, but alas, she poured a quart of stuff over the imageless plates before she realized her mistake. She says she means to use them again, when she has an unimportant subject. But who ever had an unimportant subject? If we do not take ourselves and our work seriously, who will? "No man—or woman—can do anything well who does not think what he does is the centre of the universe." That is Emerson and true.

I found in my haste I had a boy in the background, whose legs against a man who had a pair of his own gave a quadruped effect to the picture. It was not a success. I always develop more than I see with my eyes or on the ground-glass; it may be, I do not sufficiently study the subject or my lens is in itself creative.

"Ice in March a dollar a load," sighed Fragoletta, as we put our plates in the rack to dry. They dry quicker on their edges on blotting paper, but when one has bought a rack why not use it?

"Ah, but think of the cheapness of strawberries in June," I responded with promptness.

"Yes," she answered, cheerily, "and we can look at these negatives when our ice-man asks us eighty cents a hundredweight."

"It is solving the riddle to have left the men on the pond and yet to have them," I said, but nobody laughed.

Adelaide Skeel.

ON DEVELOPMENT OF "INSTANTANEOUS EXPOSURES.

(London and Provincial Photographic Association.)

WHEN our Secretary unfortunately (for me) asked me to open the discussion to-night on the development of instantaneous exposures, I asked to be excused, as I do not think that I can add any new facts to the already voluminous instructions, formulas, and treatises on the subject; all that I can do is to state a few of my own experiences and methods of working. I must premise my statement by assuming that what is meant by development of instantaneous exposures I presume to interpret as the obtaining the best results from plates that have had a bare or insufficient exposure, because, although full exposure is often attained and even over-exposure occasionally met with, I take it that the difficulty lies in obtaining the maximum of detail—with other good qualities—with the minimum of exposure. Bearing this in mind, I will now state the different developers that I have used and the advantages and disadvantages that I have found with them.

I started with pyro and ammonia, and quickly found that, if used beyond a certain strength (the ammonia, I mean), chemical fog invariably ensued; the same effect was caused by longer development with a weaker solution, and in both cases iridescent surface markings were produced, while the smell of ammonia is very objectionable to me. Of course, if bromide is used, the fog can be prevented, but only by the sacrifice of shadow, detail and good gradation.

When hydroquinone was introduced I hailed it with delight, as I thought that the above defects would be cured; and so they were, but other disadvantages cropped up. With carbonate of soda the time taken to develop a plate was abnormally long; with potassium carbonate it somewhat shortened, but frilling was much in evidence; but the most serious objection in both cases was that the

scale of gradation obtained was bad, the high-lights completely blocked up, the half-tones weak, and the fine detail in the shadows worth nothing when printed—in fact, the negatives were very hard. Then the caustic alkalies were tried; and with caustic soda I worked for some time. More detail was obtained, and at the same time the high-lights were less like lumps of coal, the gradation better (apparently), and the negatives nicer to look at; but their prettiness was deceptive when you came to print. Although they looked sparkling and strong, the prints were very much the reverse. I also fancied that the grain of the deposit was much coarser, owing, perhaps, to the rapidity of development, which was extraordinary compared with the carbonates in warm weather; but temperature played havoc with the time taken, and also with the results. In the winter half an hour would sometimes pass before the image began to appear, and when development was finished the plate had all the defects common to those done with carbonate.

In hot weather, the developer was quite unmanageable; bromides certainly made it usable; but the resulting negatives were again hard, so this was given up. Caustic potash gave the same characteristics, with the addition of causing frilling *in excelsis*.

Eikonogen I tried, but not extensively. I could not get sufficient vigor, although detail was abundant, and the grain of the deposit very fine indeed.

I now come to a developer that I think fulfills all the requirements that one can desire—that is to say, all the detail in the shadows that is possible; vigorous high-lights without the undue blocking-up characteristic of hydroquinone; no chemical fog with even prolonged development, the half-tones well rendered, and the printing capacity all that can be wished; the grain of the deposit is fine, and the color of the deposit a greenish black, which I, and I think many others, prefer to the bluish and grayish blacks produced by hydroquinone, eikonogen, etc. The developer I refer to is pyro and soda compounded in the following proportions:

Pyro	480 grains
Soda sulphate	4 ounces
Citric acid	30 grains
Water to	10 ounces
Anhydrous carbonate of soda	480 grains
Soda sulphite	160 grains
Water to	10 ounces
Take of pyro solution	20 minims
Take of soda solution	240 minims
Water up to	1 ounce

I have said: Take of soda solution 240 minims, this is the quantity I generally limit myself to per ounce; but I, of course, do not add it all at once, in five cases out of ten not more than half the quantity will be required. Bromides I never use, excepting I fear much over-exposure; I prefer to increase the quantity of pyro.

You will notice that the quantity of soda sulphite added to the carbonate solution is in the proportion of 1 to 3 of the carbonate; this I have found to be the best adjustment of the quantities in order to obtain the color of the image I have previously mentioned—namely, greenish black. If more is used, a pure black image is the result. If it is absent entirely the negatives are liable to get stained. I lay stress on the use of pure anhydrous carbonate of soda. In my idea it does not stain the gelatine so much; it is a definite compound, is not subject to deterioration, and is stronger. I must ask you, gentlemen, to understand that what I have said only refers to my own individual experience; I have no right to assume that others, having more knowledge and experience than myself, are not equally and more successful with the developers that I have maligned. Other reducing agents I have not tried, because I am quite satisfied with the one mentioned, and I very much deprecate constantly changing and experimenting with developers and plates.

E. W. Parfitt,

THE APPLICATIONS OF PHOTOGRAPHY TO PHYSICS.

[A Lecture Delivered at the *Photo-Club de Paris*, by Mr. A. Berget, Professor of Physics.]

After a few introductory remarks the lecturer, Mr. A. Berget, thus proceeds:

Let us remind, in a few words, what is physics; it is, you know, the study of the natural phenomena which do not alter the constitution of bodies but only communicate to them, in a transcient manner, some new properties.

Heretofore, to study the natural phenomena, one confined himself to very short and superficial researches. The experiment was interrogated in a rudimentary and accessory manner, and very often incomplete; as to the calculation, it did not at all intervene in the researches of the laws of nature. Endless reasonings took the place of apparatus; one argued on imaginary fluids. It is necessary to say that this argumentation was to no purpose? As it has been said so rightly by J. B. Dumas: "Every science to which the measure, the weight and the calculation are not applied, can not be considered as an exact science; it constitutes a col-

lection of abstractions without unity, of simple conceptions of the mind."

However, a man, immortal in the history of sciences, Newton, had indicated to the physicists the true way in which they should enter: that of the precision in the experiments and in the measures; but, he excepted, we must reach to the end of the eighteenth century to see, in France, the first *measures* effectuated by the physicists. One of these physicists was Charles-Augustin de Colomb, Colonel of the Engineers in the army of Louis XIV.; the other was Borda. The former discovered the law of the electrical attractions, and constated that it was the same as that of the universal gravitation, the latter measured the earth and the intensity of gravitation in various places.

Since then, physics has continued to follow the way indicated by these *savants*, and, to-day, can we define it: *the science of exact measures.*

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Consequently we will be good physicists if we know how to make good measures, and the value of the laws which we will deduct from our experiments will depend on the precision by which they will be conducted.

Every measure requires the *concours* of two very distinct elements: One is passive, the other is thinking. The former is an *apparatus*, the latter is the *observator*.

To-day the manufacturing of machines has acquired such a degree of perfection that our apparatus are very nearly perfect, and give us, certainly, all they can give us.

But the observator is not as perfect as the apparatus, and it happens that man is inferior to the product of his hands. I explain this by an example.

Let us suppose that it is a question to observe a star by the aid of an astronomic lunette. The observation consists in placing the luminous point constituted by the star, in the centre of a small square formed by four threads stretched in the field of the lunette. Whatever be the care the astronomer takes to effect it, it will never mathematically place the image of the star in the centre of the square; he will place it a little to the right or to the left; but he will always make a slight error of application which is termed *personal error*.

And what is strange, if he places the point a little to the left, he will always place it so, did he a hundred times recommence the pointing. This is designated by saying that his *personal error is constant*.

The only means of eliminating the personal error is to have the same observation made successively by a great number of astronomers; their personal errors are not all on the same side, and in taking the average of their observations, there are many chances that the errors be compensated one by the other. But this is only a probability, it is not a certitude, and if one could replace the eye of the observator, which only keeps a transient impression, by an eye capable of keeping a permanent image of what it has seen, the personal error would be at once suppressed, and a witness of the experience would remain. That eye, you have foretold it, it is the *photographic* camera. Here is a first reason of its use in the measure of precision.

Another reason is that, often, one has to study a transient, fugacious phenomena which lasts but one instant, and which must be taken in the flight, so to say. Then the use of photography is a *sine qua non*, it fixes the phenomena in one of its phases, and on the image the physicist studies at leisure the circumstances which he has registered; he takes the measures on the positive plate in devoting to it all the necessary time, which it would be otherwise impossible to make with precision.

I will try to rapidly show you the principal applications of photography to physical phenomena of various orders.

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You know what is meant by *molecular physics*; it is that branch of the science in which one studies the laws governing the inert matter, under the influence of the sole matter; when the bodies are withdrawn from the action of light, heat, electricity, magnetism, the phenomena which then manifest themselves are the object of the molecular physics; gravitation, the equilibrium of liquids are in this case. It is a branch of physics of a primordial interest; it is by its development, specially, that the pure mathematics have taken, in the direct study of nature, the preponderating place which they should occupy.

One of the most interesting subjects of the molecular physics is the research of the laws of the flowing of liquids. This research has tempted the most illustrious *savants* of every time, and to-day still a number of them devote themselves to it. Among the phenomena they study, one of the most curious, because it daily occurs, is the flowing of water by a narrow opening; the liquid then spouts out under the form of a small stream of a crystalline and continuous aspect; it looks like a very transparent glass rod.

This continuity of the stream is, however, only an appearance. Savart, the first, in the beginning

of this century, showed by a very elegant experiment its true constitution. Instead of looking at the phenomenon in a persisting manner, he examined it by intermittent intervals, through the holes bored at the circumference of a disc revolving rapidly.

In these conditions the stream appeared, not continuous, but formed by isolated drops, without contact one with the other; their diameters was alternatively increasing or decreasing, and two consecutive drops were separated by a much smaller drop; the appearance of a continuous stream was transformed into that of discontinued chaplet.

To-day, instantaneous photography, with the aid of a rapid shutter and the gelatino-silver bromide, allows to fix on a plate the black images of these small drops in chaplet; one can then study at leisure the form of the drop fixed on the plate; and one constates that they alternatively present the profile of a sphere, of a elongated ellipsoid and of flattened elipsoid. Thus it is seen that matter, left to its own forces, withdrawn from the action of contiguous bodies, always tend to take the spheric form or a similar form; and we cannot help to compare this form to that of the celestial bodies, immense molecules of a whole infinitely immense!

Have you remarked those curious phenomena which present the porous body placed in contact with perfectly fluid liquid? Did you notice the ascension of your coffee in the sugar lump you have placed on the very surface? These motions of liquid, spontaneous when they have before them narrow spaces, as thin as hairs, capillary intervals, in a word, constitute one of the most curious branches of the molecular physics: *the capillarity*.

When one looks at the bottom of things, one quickly perceives that these phenomenon are not localized in the narrow cavities as the pores of a lump of sugar or the interior of a small tube; whenever a liquid is in immediate contact with the solid side of a vase its properties are changed; the form of the surface is modified and the ordinary laws of hydrostatic seem at fault.

A typic example of this fact is the form which takes the terminal surface of a liquid poured in a glass; when an excess is poured in, before overflowing, it swells, takes the form of a convex surface, and so long as the excess of liquid is not considerable, the glass remains filled at a level superior to that of its terminal plane.

Therefore we will not be surprised to see a drop of liquid, provided it is placed in a proper position, take the form of a round botton; the question has been treated by calculation and the result permit to know the size of the capillary phenomenon, at the condition that one exactly know the contour, the profile of a drop of liquid placed on a plane.

But here a difficulty occurs; the least alteration alters the form of the outlines, the most trifling causes, in appearance, modify to profile, and the phenomenon is absolutely variable; one should, consequently, delineate the drop at the very moment of its formation or in a few moments after, and observe it very rapidly.

The instantaneous photography by the aid of the magnesium flash-light has permitted to resolve this difficulty; on a gelatino bromide of silver plate, one has reproduced an image, enlarged if necessary, of the liquid drop at the moment of its formation, and with this image it will be very easy to the physician of determinating the nature of the curve of the drop, and, from the form of the profile to deduct the properties of the liquid which constitutes it.

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The exact measure of the temperature and of its variations is incontestably one of the most important of physics, for there is not a single phenomenon on which the temperature does not exert a capital action.

Under the action of temperature, the length of the metals increases; the vaporation of the liquid is accelerated, the tenacity of the metals diminishes; when one heat a copper wire it does not as well conduct the electricity. The refraction of light by glass also increases when the temperature becomes greater. In a word, all the physical sizes, all the manifestations of the natural forces depend from this premordial factor: heat.

It is the thermometer which serves to measure the temperature, the apparatus will be, therefore, the object of all our cares and its observation will be made in view of the greatest experimental precision.

So long as we have only to observe the temperature at a given moment, nothing is more simple; we will look at the thermometer not in coming near it, for the heat evolved by our body could alter the indication of the apparatus, but from a distance with the aid of an opera glass. We will thus know the temperature at the instant we have an interest to ascertain it.

But if we want to have the value at all the instant of a long experiment, we would be bound to a continuous observation, and so tiresome that one could not depend on the exactitude of the

numbers observed in such conditions. One has then recourse to the photographic registration. The tube of the thermometer being made of crystal is therefore transparent. One illuminates it by the light passing through a vertical slit, and the luminous, in these conditions, passing above the mercury the shadow of the thermometric column will be projected on a screen placed behind. If this screen is covered with a sheet of sensitive paper, and if, besides, it is animated by a motion of translation by the mechanism of a clock, the sheet will be separated in two parts, one white, corresponding to the column of mercury, the other black, corresponding to the part of the tube not filled with the thermometric liquid. The curve which divides these two parts one from the other, permits one to ascertain at any time, which was the temperature indicated by the apparatus, and to keep of it a permanent impression. The same continuous arrangement is as well applied to two thermometers, one with a dry reservoir, the other with a damp reservoir, and they are placed near each other, so as to know, by the difference of their indications, the degree of humidity of the air; this apparatus is termed *psychrometer*.

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It is the study of electricity that we will now find the most curious and less expected applications of photography.

I will only speak for memory of the manner by which are registered the indications of the apparatus which serve to measure the quantities of electricity existing in the atmosphere or the intensity of the electric current. In all these apparatus, the movable organ (generally a needle) is supplied with a mirror which project the image of a luminous point on a strip of sensitive paper vertically dragged along by a clock movement. When the needle oscillates, the liminous point also oscillates, and, instead of tracing a black straight line on the sensitive paper, traces a sinusoidal curve; the amplitude of these sinuosities is in relation with that of the deviation of the needle, and, from their measure, one can deduct that of the studied phenomenon.

I will presently describe the most curious photographs, those of the electric discharges.

When an electric discharge occurs between two bodies, a spark appears with a sharp noise; light and sound so much remind one, at their reduced scale, the light and noise of thunder, that the old physicists could not help of assimilating the two phenomena which to-day we know to be identical.

Nothing is more curious than the ramifications of the spark; but, it lasts but an instant, an infinately small fraction of a second. Hence it is here more than ever important of fixing the phenomenon during its production.

The extreme sensitiveness of the gelatine silver bromide films permit to do it quite easily; but there is something better; one can, in certain cases, dispense with a lens. By placing the photo-plates between the two bodies which must serve as a point of departure and the point of arrival, the discharge is produced on the plate itself, and the least sinuosities of the ramifications impress the sensitive films. If one take as one of the electrodes of the discharge a piece of money, it is designed on the negative obtained. One cannot, however, fail to be impressed by the absolute resemblance between the photographs of electric sparks thus obtained and the photographs of sparks obtained by some observators.

The nature of the discharge itself is to us revealed by photography; if a luminous discharge is produced opposite a mirror having a rapid motion of rotation, the eye will see, if their rapidity is sufficient, what he could not perceive without that artifice.

If the discharge is due to a continuous flux of electricity, he will perceive the sensation of continuous band of light. Is, on the contrary, the discharge alternative? The band will appear stratified, and the stratifications become closer as the alternativness are multiplied. Thus has been studied the structure of the electric arc, this light so brilliant which illuminate our streets and stores.

You see that, here again, in the new conquests of the contemporary science, photography brings its important concourse to the study of the phenomena, by permitting us to penetrate deeper in their intimacy.

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Lastly there remains a class of phenomena upon which I ask the permission of insisting; their photographic study only commences, but it will be very probably fecund; I refer to the gravitation of bodies on the surface of the earth.

You know that at the beginning of one of his fables, La Fontaine has placed the distich following:

"*Dames mites disaient à leurs petits enfants :*
'Il fut un temps où la terre était ronde.'"*

The good fabulist did not think to say so well when writing these two verses; in fact, the earth is not exactly round. It is flattened at its two poles and swelled at the equator, exactly as a balloon of

* "Dames mites said to their grandchildren:
'There was a time when the earth was round.'"

India-rubber which one squeezes between the two hands so as to slightly flatten it.

From this it results that the bodies are less heavy at the equator than at the poles, since, in consequence of the flatness of the earth at that point, they are nearer to the centre than the others. But how can this variation of weight be measured? Not certainly with a scale, for if the bodies to be weighed diminish in weight in coming nearer to the equator, the copper weight which will serve as a measure will diminish in the same proportion. We must, therefore, look for other measuring methods.

For that purpose, one causes a pendulum to oscillate (that is, a thread holding a solid ball) at two different parts of the globe, and from the measure of the oscillations of this pendulum during a given time, the gravitation at the place of the experiment can be deducted.

Therefore, we must be able to correctly count how many times the pendule will oscillate during the period of the experience. An ingenious method was imagined by Borda in the last century; it is known under the name of *method of the coincidenses*. But, unfortunately, it is liable to that "personal error" of which I spoke in the beginning of this lecture.

Photography has permitted me to avoid that cause of error, and, at the same time, to have more precise measures and experiments of a longer duration.

I have installed in the laboratory of la Sorbonne a pendulum which has oscillated 100 consecutive hours; a lens was fixed to the oscillating mass and projected on a band of a pellicle of Eastman the image of a luminous point. When the pendulum oscillated, this image displayed itself on the hand, and as the latter was dragged by the movement of a clock, it carried away the mark of each oscillation in the form of a sinusoïdal curve which appears by the development. Hence, it will suffice to count the number of sinuosities during the experiment, to deduct from it the number of oscillations, and, consequently, to calculate the intensity of the gravitation.

I will terminate here this rapid description of the applications of photography to physics. I have purposely omitted a great number, particularly its application to the study of optic, but these are so numerous that a special conferency should be made to describe them properly.

I was telling you in beginning that photography was the daughter of physics, you see that it practises the filial gratitude, and knows how to render a hundred fold what it has received.

Notes and News.

Orange Blossoms.—Miss Mary Wilson Adams, only daughter of W. Irving Adams, and Mr. William Palmer Brigden, an artist of New York City, were married Monday evening, October 31, at Montclair, N. J.

Department of Photography, Brooklyn Institute.—An election of a Board of Officers, held October 24, 1892, resulted as follows: C. Foster Flagg, President; George W. Wundrum, Vice-President; Gould W. Hart, Secretary, No. 849 Monroe Street; Dr. L. E. Meeker, Curator; P. L. Le Brun, Treasurer.

A Popular Member.—At the New Orleans Camera Club's meeting on the fifth instant. Mr. P. E. Carriere's resignation was read, and it was unanimously resolved that it be not accepted, and that he be transferred from the active to the honorary roll. The club wished him a prosperous future, and that his continuance on the roll may be of life-long existence.

Mr. Carriere will, therefore, still be, as in the past, among his friends in the club. His intention is to devote all his energy to the promotion of amateur photography in the South.

Men, not Things.—A few members of one of our leading English societies point out that although the excellent American Exchange sets have made us familiar with much of the best American work, we know little of the majority of the leading American workers, and they suggest that a set of slides showing the counterfeit presentments of these workers, with brief biographical notes of each would prove most interesting on "this side." This is certainly true. We would suggest, however, that the interest and variety of the series would be greatly increased if each portrait could be followed by a couple of representative examples in the characteristic style of the worker represented. We trust that one of the powerful American Societies, or some other of the friends over there will take up the notion, and that the photographic editors (whose portraits decidedly ought to be included) will help it along. If a similar set of English workers would be appreciated in the States, no doubt it could be arranged.—From *The Practical Photographer*.

The Editorial Table.

An Attic Philosopher in Paris. By Emile Souvestre. New York: D. Appleton & Co.

The great popularity of "An Attic Philosopher in Paris," has very properly led the publishers to prepare this fine illustrated edition for the holidays. A large number of the illustrations are full-page reproductions from pictures by the French artist, Jean Claude. There are also a number of attractive vignettes by the same artist, giving the book a decided holiday appearance. The paper and press work are all that could be desired by the most fastidious book lover, and the rich binding has been especially designed for this volume. It will undoubtedly be one of the most popular of the autumn books, and deserves a wide circulation among photographers, especially, and all interested in finely illustrated books.

8vo, cloth, $1.50

Autumn. From the Journal of Henry D. Thoreau. Edited by H. G. O. Blake. Boston and New York: Houghton, Mifflin & Co.

With this volume the four seasons as they were represented in Thoreau's Journal, are nominally completed, as edited by Thoreau's literary executor, Mr. H. G. O. Blake.

Like the preceding volumes on Spring, Summer and Winter, the present work is composed of extracts from Thoreau's journals of various dates, beginning with descriptions of Nature in and about Concord in the early fall and continuing until the winter. An excellent index completes the volume, and makes it especially useful as a book of reference.

For all lovers of nature (and what genuine photographer is not a lover of nature?) this book, like all of Thoreau's works, is a constant source of pleasure and instruction.

It is bound in dark green cloth, with gilt lettering, uniform with the other volumes of the series, and with the latest edition of Thoreau's complete works. The mention of the publisher's name implies perfect typography, press work and binding.

12mo, gilt top, $1.50.

The Foot-Path Way. By Bradford Torrey. Boston and New York: Houghton, Mifflin & Co.

Here is another book for nature lovers, by the author of "Birds in the Bush," and the "Rambler's Lease." It is a delightful out-of-door book, written with the same literary skill and humor which characterizes the previous volumes by the same gifted author. Some of its chapters described June in Francania, December Out-of-Doors, Five Days on Mount Mansfield, A Widow and Twins, A Great Blue Heron, Flowers and Folks.

The particularly appropriate title was suggested by the following verse in the "Winter's Tale":

> *"Jog on, jog on to the foot-path way,*
> *And merrily hent the stile-a,*
> *A merry heart goes all the day,*
> *Your sad tires in a mile-a."*

Bound in an attractive green cloth cover, with special and most appropriate designs, the little volume forms a most attractive gift book. Price, $1.25.

The more important articles in *The Mother's Nursery Guide* for November are: "Constipation in Children," by Dr. C. L. Dodge; "Common Disorders Attending Maternity," by Dr. Joseph B. Cooke; "The Prevention of Disease in Children," by Dr. W. B. Canfield; and "Our Relations to Our Neighbors' Children." A large number of helpful hints are included in the departments of "Nursery Helps and Novelties," "Nursery Problems," etc.. This number contains the detailed index for the year, a glance at which shows the wide range of subjects treated, justifying the claim of the magazine made, when it started eight years ago under the name of *Babyhood*, that there was room for a journal which should become in every sense an authoritative guide to mothers in the care of children. Any mother may have a sample copy free by addressing the publishers, Babyhood Publishing Co., 5 Beekman Street, New York. $2.00 a year.

Queries and Answers.

366 E. A. MACD.—I have been using the para-amidophenol developer according to formula published in THE TIMES, and find that with protracted development (from twenty-five minutes on) the *negative becomes a positive* (like a muddy lantern slide) with *negative high lights*. Diluting with water and allowing the negative to soak has the same effect. The plate gets a *metallic lustre* and the hypo leaves it white and opaque. The fault does not lie in the hypo, and other plates properly exposed develop and fix perfectly in the same solutions. If there is a remedy for this, will you kindly give it in the Query Department of THE PHOTOGRAPHIC TIMES? I use both Carbutt's and Wuestner's orthochromatic plates.

366 *Answer.*—The effect described is known to photographers as reversal of the image, and is almost invariably caused by solarization or over-exposure, especially so when larger quantities of a bromide are added to the developer, although other causes like, for example, certain dyes in the orthochromatic processes have been observed to produce reversal (Victor Schumann). *A propos*, let it be said that many amateurs experimenting with para-amidophenol in any form overexpose their plates, and failures will occur consequently.

That para-amidophenol has a much greater tendency to reverse the image than other organic developers has been observed before (*Photographische Correspondenzen*, 1892, page 147), and we have noticed it also in our own practice.

Plates developed in such strongly alkaline solutions as that spoken of, and more so when the process is extended for twenty-five minutes or longer, and iridescent appearance of the plate or metallic lustre even is very likely to follow. Is the plate in serviceable condition otherwise, lustre or iridescence can be easily removed by working with a very dilute solution of ferricyanide of potassium and hypo. The solution reduces the density of the image, must therefore be handled very dilute and cautiously.

That these plates do not fix properly in your ordinary hypo bath is enigmatical to us. The color sensitizer of either Carbutt's or Wuestner's plates cannot be the cause, and to come to a decision, we would like to examine such a plate, and also like to know the composition of your fixing bath.

367 F. C. C.—Can iodide and bromide of cadmium be used for making skim milk prints instead of iodide and bromide of potassium? We have heard it could; if so, in what proportions? We are using 16 grains of iodide and 4 grains of bromide of potassium to each ounce of serum, but have heard the cadmium gives better prints. Information will be thankfully received.

367 *Answer.*—You may use cadmium in substitution of potassium salts, but your silver bath should then be of slightly different concentration, if you want to be quite correct.

To convert 1 grain of silver nitrate into

Silver bromide requires	1.25 grains cadmium bromide
Silver iodide requires	1.023 grains cadmium iodide
Silver bromide requires	1.427 grains potassium bromide
Silver iodide requires	1.174 grains potassium iodide

Whether you use cadmium or patassium, there will be but a slight difference in the final result, if any at all. We think a little less bromide might do better. Alter the proportions from 16:4 to 20:4. How strong is your silver bath?

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W. I. LINCOLN ADAMS, Editor.

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The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47..... 25
Orr's Circle of the Sciences, Vol VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English). Vols. I. and II. (except No. 18), 1890, 1891.

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MESSRS. ALLEN BROS. NORWICH, February 1, 1890.
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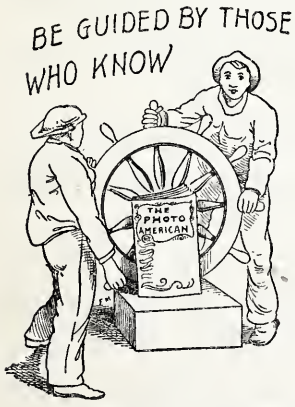
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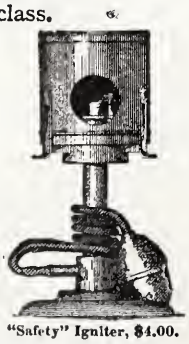
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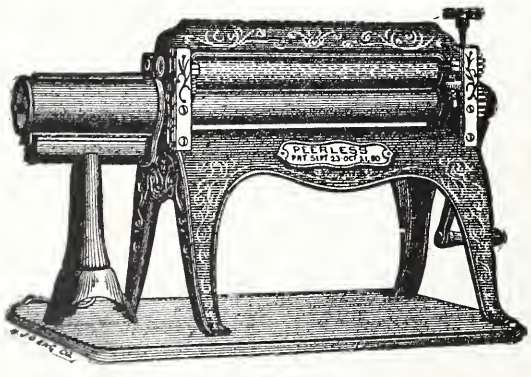
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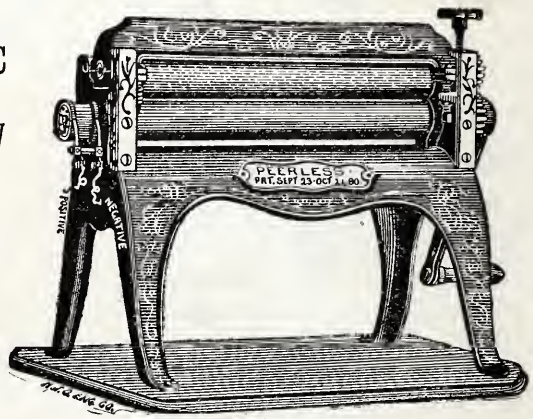
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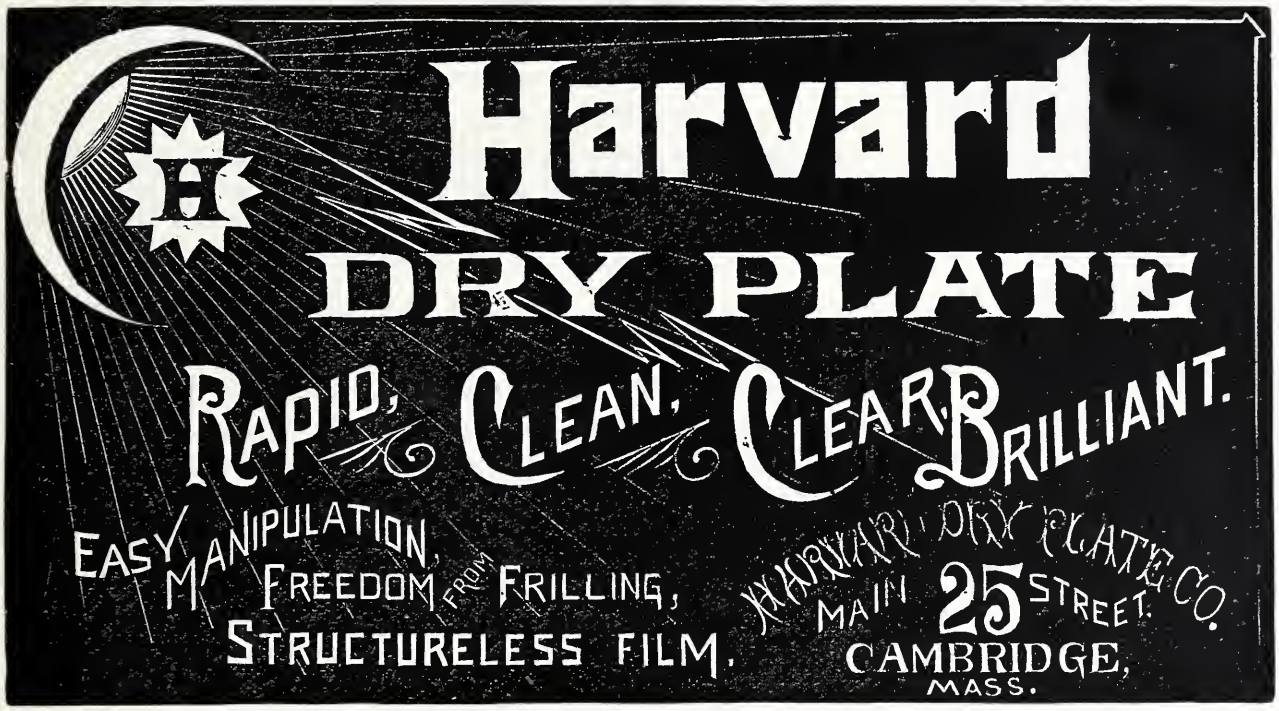
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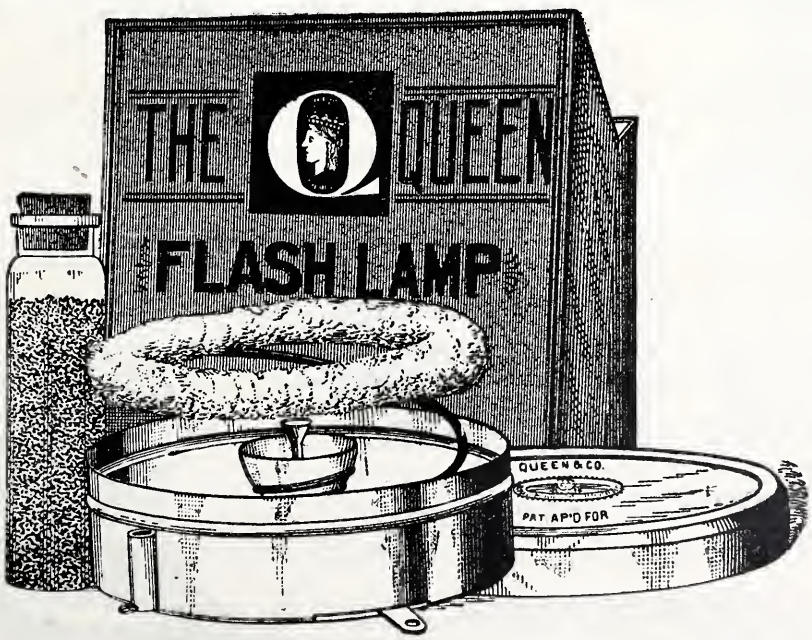
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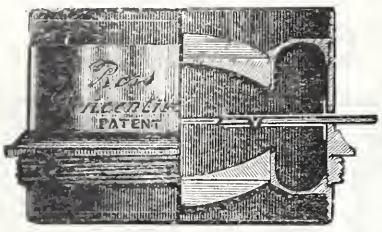
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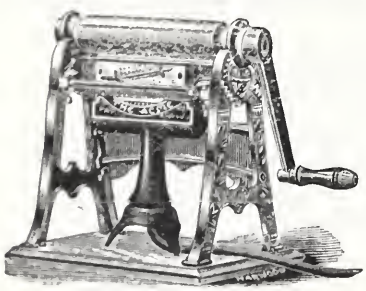
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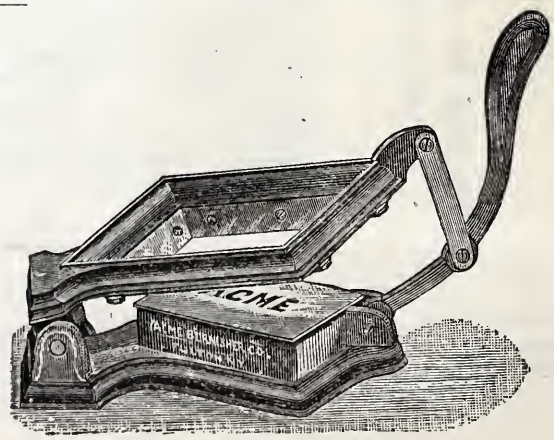
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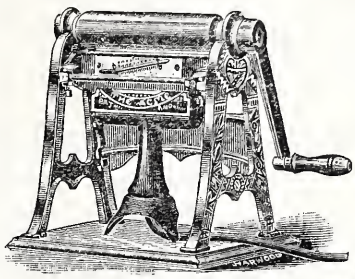
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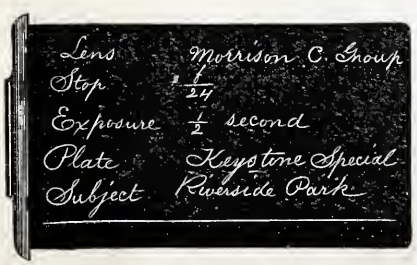
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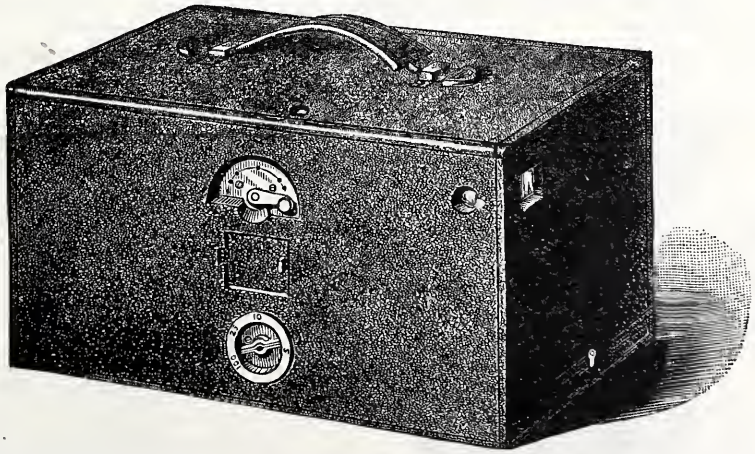
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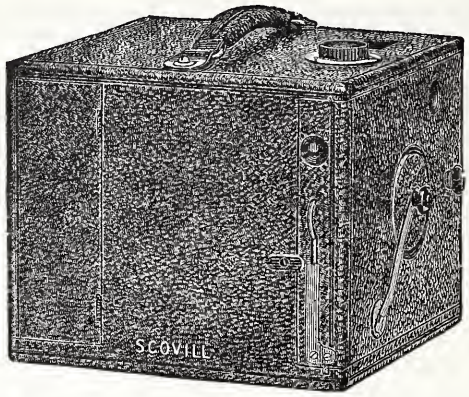
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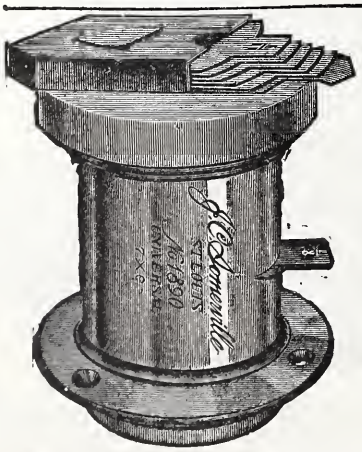
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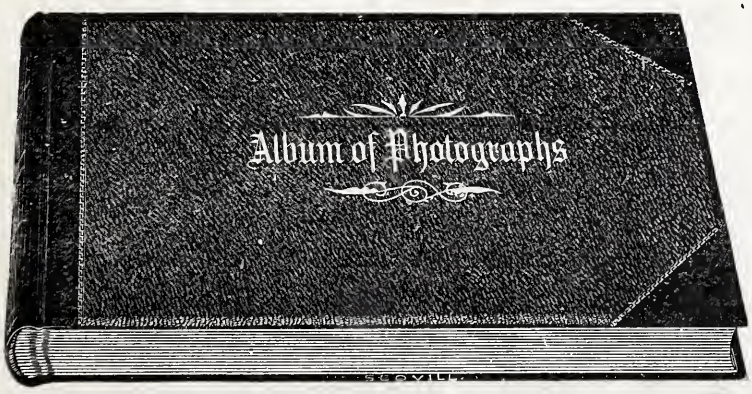
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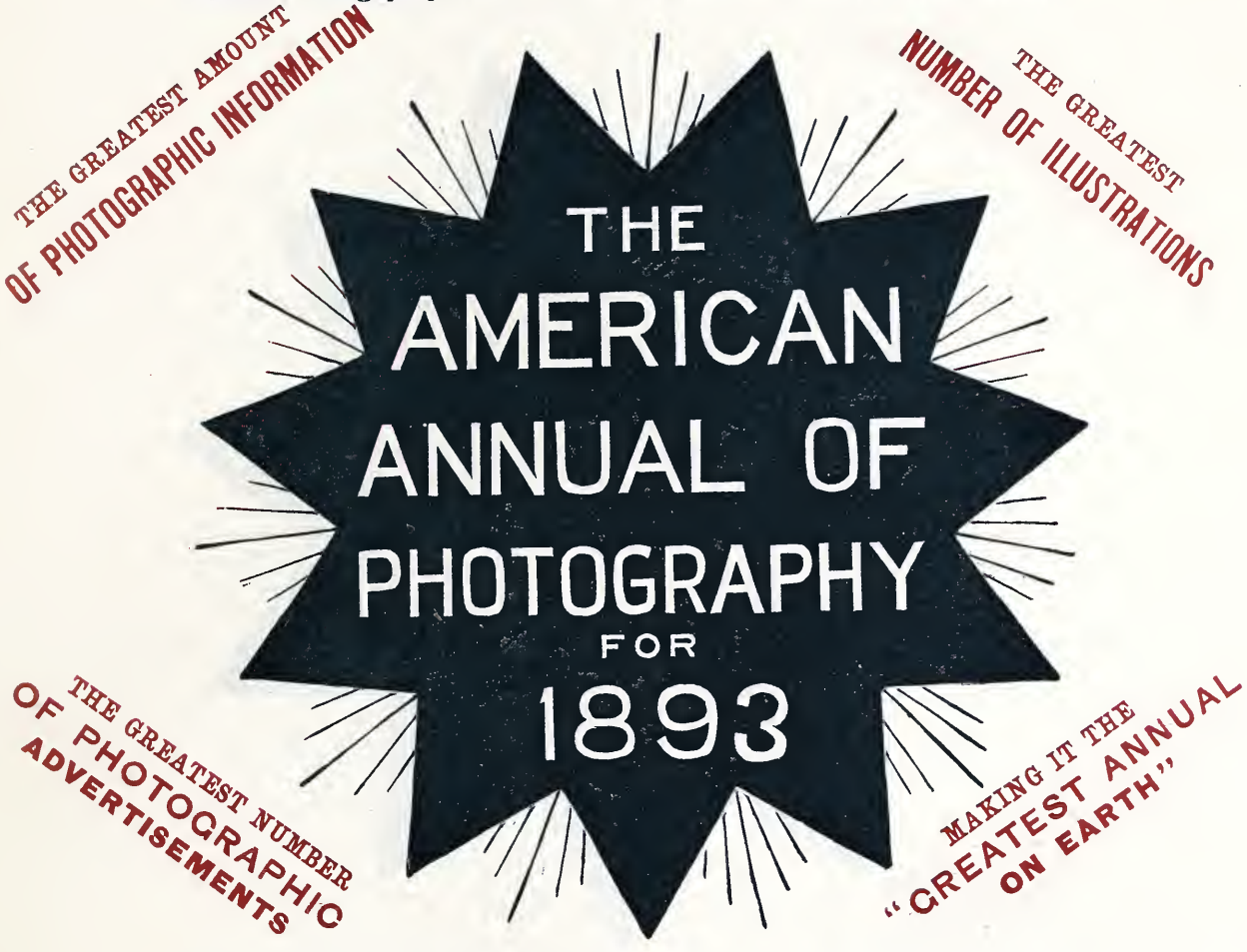
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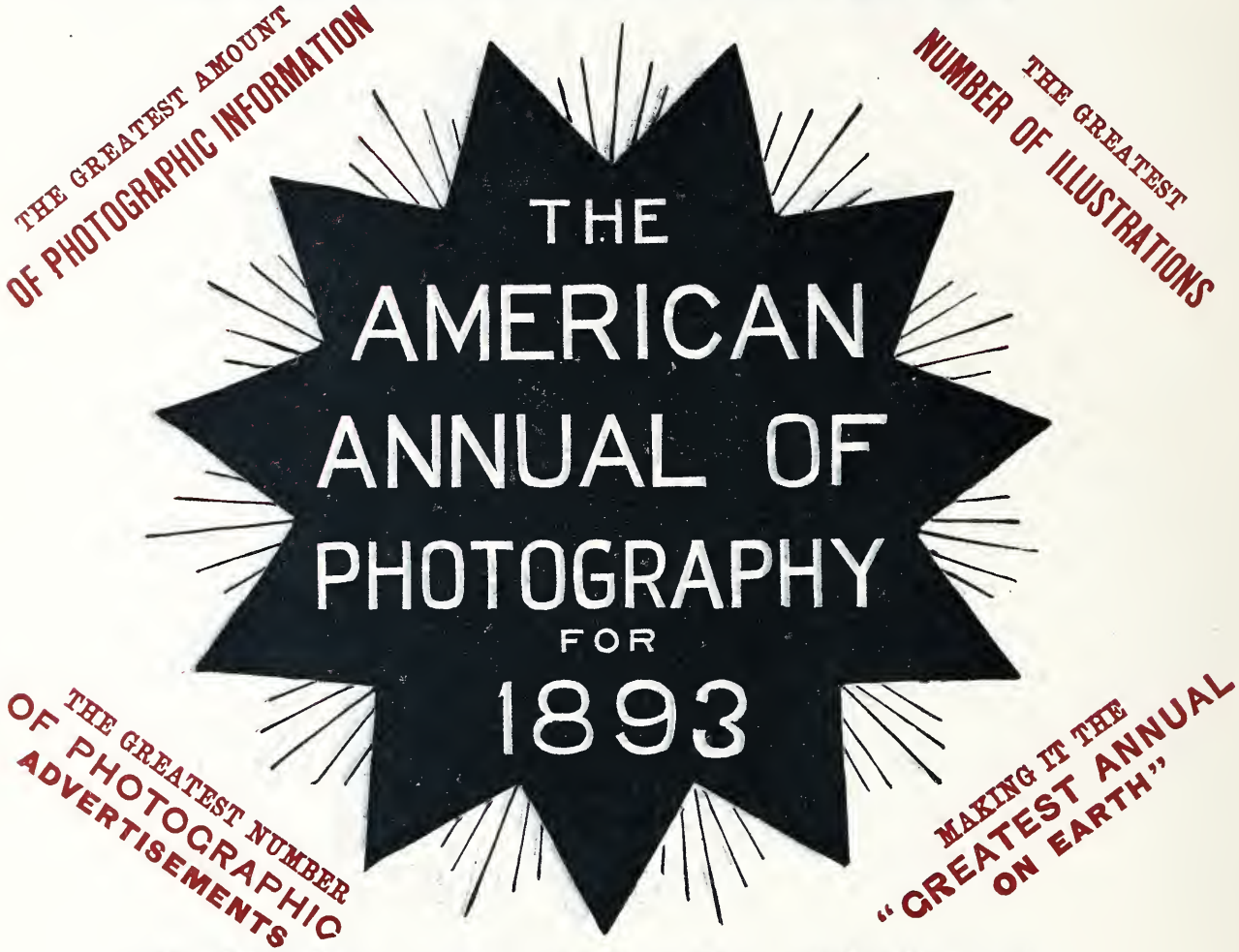
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Very truly Yours,
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THE PHOTOGRAPHIC TIMES.

VOL. XXII. NOVEMBER 11, 1892. No. 582.

BAYARD TAYLOR.

WE present our readers this week with another portrait in the series of Eminent Americans, by Mr. Gutekunst, who makes both the negatives and the reproductions.

Bayard Taylor is a well-known name in the annals of American literature, too well known to require comment by us.

The portrait is up to the usual high standard of excellence maintained by Mr. Gutekunst, both as to its naturalness of pose and effectiveness of lighting. Like the portraits of Longfellow, of Grant, of Sherman, of P. T. Barnum, of Lawrence Barrett, of James Russell Lowel, and the other subjects in this series, it is an example of artistic portraiture, which may be studied with profit by all who desire to excel in this interesting and important branch of photographic work. As in the case of the other portraits, the signature is a photographic reproduction from the genuine autograph of the subject portrayed.

THE AMERICAN INSTITUTE FAIR.

EXHIBITION OF PHOTOGRAPHS.

THE exhibition of photographs at the American Institute Fair this year, while fully up to the average of such exhibitions, possesses rather less interest for the general public, than did the excellent exhibition last year, on account of the large display of photographs made by members of the Society of Amateur Photographers of New York, which is lacking this year. There are a number of very fine collections by well-known professionals, though there is nothing strikingly new presented this year.

Frank Pearsall deserves a first place with his admirable collection of portraits, showing his mastership particularly in posing and lighting. They are all well printed on platinum paper, and are tastefully mounted.

Charles D. Fredericks adheres to the orthodox method of printing on albumen paper, and is up to his old standard of excellence not only in his printing and toning, but particularly in the posing and lighting of his single portraits and groups. The life-size crayons and pastels are of the usual good quality, as well as the aquarells.

Wilhelm excels in his cabinets and boudoirs, as well as larger-size photographs, and really presents a finer collection of studio work this year than ever before. Wilhelm is becoming one of New York's most artistic photographers.

Tanquery presents nothing particularly new or striking, though the two large female heads in pastel are exceptionally good. His crayons seem to lack a certain softness in effect, which would render them more pleasing.

De Young's exhibit is fully up to former years. His plain photographs are rather above the average, and his large oil-painted portrait, crayons, and pastels, are such as would please the mass of a photographer's customers.

Mrs. Robinson shows decided progress. A frame of vignetted portraits, artistically tinted, testifies to her fine taste in such matters. There are many cabinets and large-size pictures of very fine quality in this exhibition. She also shows architectural views and landscapes made abroad.

The Couleue Glace Company exhibits a variety of photographic portraits, vignetted and plain. They are tinted with water colors, and afterward glaced.

The Iota Celluloid Transparency Company exhibit specimens of their celluloid printing, which are very pretty and interesting.

The Alley-Allen Press makes an interesting display of photo-engravings and half-tones, etc., of many subjects, and in various sizes. The work is exceedingly well done in every particular.

Radam Microbe Killer Company makes an exhibit of some remarkable photographs, which have

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been greatly enlarged from photo-micrograms, with the plain reproductions printed, for the most part, by the Lichtdruck process. In these photographs we see the bacilli of Asiatic cholera, typhus, diphtheria, and other diseases, as well as several diatoms and desmids. It is a rare and interesting exhibition.

Photographic apparatus is exhibited by both Messrs. E. & H. T. Anthony & Company and The Scovill & Adams Company, the former firm, however, exhibiting as well, specimens of chemicals, and other requisites of the photographer. The Scovill & Adams Company confines itself solely to cameras and apparatus this year, making a notable display of portrait and field boxes, from a portrait camera making a picture 25 x 30 inches in dimension, down through the various studio and landscape cameras to the neat and serviceable 4 x 5 Waterbury. This exhibition is a notable one, containing as it does, such a variety of cameras of all descriptions and sizes, some with tripods, and some for the hand. Most of them have already justified their excellence of construction and convenience in manipulation by the great popularity which they have attained, such as, for instance, the Henry Clay, for stereoscopic work and single pictures; the Triad, for plates, films, or roll-holder; the Waterbury, the Knack, and the Advill. Some of the newer hand cameras exhibited are the Rattler, a convenient box, carrying 4 x 5 plates, which sells for only $5; the Bristol, a new magazine camera, carrying twenty-four $3\frac{1}{4}$x$4\frac{1}{4}$ films for obtaining negatives for lantern slides, $30; and the Columbia, the latest magazine camera, which carries twelve 4 x 5 plates. The exhibition, as a whole, is well worth a visit by any one interested in photography.

ON THE RAPIDITY OF THE DEVELOPMENT.

IN the *Revue de Photographie* for September the director of this journal, Mr. E. Demole, gives the following instructions for the development of plates under-exposed:

"..... It remains the case when the plate has been shortly exposed, and here many amateurs do not lose the occasion of making a mistake. It is evident, they say, that a little exposed plate requires an energetic treatment which forces the image to appear. And, starting from this false notion, they treat the negative with an energetic reducing agent, quite satisfied to see the image appear in a few seconds, but what an image! However, we should not blame them. Is it not by spoiling dozens of plates that one learns something about photography?

The development of an under-exposed plate is a true creation, one must supply what the plate had only a glimpse of; that something exists in the latent state, it is true, but, with a little patience, we may bring it out, as, also, we can forever destroy it by our hastiness to force it to appear. In the case of over-exposure, our remedy is to increase the contrasts; here it is exactly the contrary, they are too great, often there is nothing else. The plate has only been acted on by the great lights; as to the details in the shadows they have hardly impressed it; hence let us avoid everything which may favor the contrasts, and to commence with, let us use a developer without bromide or any other restrainer, that is, one entirely new. But this is not even enough if we develop as in the case of ordinary exposure time, the contrasts will be exaggerated in relation to the rapidity of the development.

Therefore let us take a new developing bath, free from a restrainer, let us dilute it considerably with water, then immerse into it our plate, then cover the tray. We will have to wait for a long time, may be ten minutes, twenty minutes, half an hour, but it will, however, come, a moment when the action of our bath will seem to be null, and even where the image will somewhat lose its sharpness. At that critical moment, throw off the diluted solution and finish the development with a little more concentrated bath which will intensify the lights and bring everything to the point. If you object to yellow negatives, remember, however, that in case of contrasts, they contribute a sort of natural retouch; but if this tint does not please you, fix with an acid bath of sodium hyposulphite....."

HALF-TONE WORK ON COPPER.

COPPER, being tougher and harder than zinc, makes a particularly good metal for type-press work. It will stand double the number of impressions and show no wear whatever. Besides the results are finer and better in every way. In as much as nitric acid is not a useful mordant for copper, entirely different methods of procedure are necessary.

It has long been known that bitumen contained properties of being sensitive to light, and this article will form our sensitizing mixture. The formula below for preparing the bitumen is to *increase* its

J. E. GETTY CENTER

sensitiveness, which in this age of haste, and "do-things-quickly" is an essential.

Dissolve seven to ten grammes of sulphur in a sufficient quantity of carbon bisulphide, and then add 100 grammes bitumen.

The solution is then freed from carbon and placed in a drying stove in which the temperature is gradually raised to 356 deg. F., until the odor of sulphuretted hydrogen disappears, which require about five hours.

The bitumen after this treatment shows itself in the form of a black mass, brilliant, insoluble in alcohol, but equally soluble in benzine, turpentine, etc.

Four parts of this bitumen are dissolved in 100 parts of benzole, which forms the sensitizing mixture.

The copper plate, having been polished with charcoal (which is made for this purpose) is dried, then coated with the bitumen solution, using a whirler to distribute it evenly over the plate.

It is now placed in contact with the negative, exposed in bright sunlight for ten minutes, developed in a bath of turpentine in the dark-room. The turpentine dissolves all the coating that has been protected from the light, leaving the image clean and clear.

The plate may now be touched up, using a fine brush, and the sensitizing mixture, placed in the light for a time, when after painting the back with shellac is ready for the etching.

One ounce of a saturated solution of perchloride of iron is added to 4 ounces water, and the plate is placed in this solution, using a glass or porcelain tray. The biting commences immediately, and is to be continued until a sufficient depth is reached, which can be judged by scrapeing through the coating on the margin, and when the finger nail catches against the edge it is deep enough. It should be about the depth of the thickness of a tin plate.

The plate should be brushed during etching to aid the solution in getting at the metal, using a soft camel-hair brush. The plate is now ready for mounting, routing or sawing away the edge, and nailing to a block of mahogany of a thickness to make the whole just type high.

Copper is being extensively used now, and half-tones on this metal command a higher price in the market than zinc work. This process is very simple and gives excellent results.

"Cuprous."

LUBRICATION.

I was replacing a castor on one of my posing chairs one rainy afternoon, when a friend who is a practical machinist dropped in. "Do you know," said he, "that if you had kept that castor oiled, it would not have come off with twice the wear." I did not know it before, but saw the point at once; so I immediately got the oil can and applied its contents freely, not only to the bearings of the wheels, but also to the pivots on which the castors turn. While I was doing this my friend went fussing around my posing chair and head-rests, and inquired why I did not oil those things. I admitted that they worked hard, but had never thought oil would be of any use. Taking the can he put a drop of oil on the thread of every thumb screw in all my head and back rests, and it was astonishing how much more easily they have worked since under a monthly repetition of the dose. Said he, putting a drop of oil on a rusty thread: "That much oil applied and kept there will prevent a locomotive journal from heating. A quarter turn will now fasten and unfasten your thumb screws; it is wonderful how much easier everything will work when oiled."

The last spot he touched was the camera; the focusing attachment was terribly stiff, and I had tried over and over again to find the cause of it, as it was a constant annoyance and inconvenience. First, he took a little on his finger and run it along the edges of the central slot, then the track on either side remarking that mutton tallow would answer better, then he rubbed it almost entirely off with a rag, and with a drop from the can oiled the thread on the lever focusing attachment. I was astonished at the result; the back of the camera moved smoothly and easily, utterly unlike its actions of a few minutes before.

A short time after I had a little trouble with my Binster shutter, so I took the lenses out of the tube, and with a soft rag thoroughly cleansed the leaves of the shutter with kerosene on both sides; judging that this did not make the action much better I took the head off the cylinder, and found it very sticky. I gave it a good dose of kerosene oil, with scrubbing, and dried it out with clean cotton, and applying a single drop of fine oil, replaced it. Its action was fully twice as rapid as formerly, and I have not had the slighest trouble with it since, and that is over four months ago.

I have no doubt that if photographers would only give ten minutes per month to lubrication, their castors and threads would last twice as long as they now do. I am aware that the makers of some

shutters advise to use no oil on the cylinders; but this I think is because when the shutter is new, oil will catch the sulphur from the rubber, and quickly get gummed up, thus causing complaint from those who don't know. But if the oil is used, and the cylinder cleansed a few times in the first few months, the tube becomes comparatively free from dust, and the action of the shutter is much more prompt than when oil is not used, therefore I have cleaned and oiled all my cylinder shutters. A short time after the occurrences mentioned, in making my daily examination of the prints, I found great unevenness of tone and depth, and also patchiness of tone on some of them. I felt greatly annoyed for I felt sure it must be carelessness, as I had trained him very carefully in his manipulations. I thought the matter over, and instead of complaining to the proprietor, I waited a little while and rejected what I had to, and taking them up to him I cheerfully inquired if therew as something wrong with the new ream of paper. He looked a little surprised, for he expected a different inquiry and a grave face; then explained that he had not separated the prints quickly enough in the fixing bath, which I knew before he told me. I kindly suggested that it was always safe not to fix or tone too many at a time, and then dropped the subject. The next day I found a great improvement in the tones; and in a short time was entirely satisfied that a little lubrication saves a good deal of wear and tear among people as well as machinery.

O. P. Rator.

CLOUDS.

[Manchester Amateur Photographic Society.]

To print a photograph of landscape or seascape with a purely white sky is so untrue to nature and so inartistic that nowadays it is a rarity except in the productions of the veriest tyro, and we seldom see it perpetrated. That clouds are an improvement to most pictures is universally admitted, but we must not rush to the other extreme and use this power ignorantly or rashly; rather let us quietly consider how, by its means, we can convert our mere photographs into things of beauty.

Sunning the Print.

Most certainly the method of obtaining clouds on the same negative as the landscape is to be given the preference over all others; but if there is a clear blue sky you may ask, "How is this to be accomplished?" Well, unless you are using isochromatic plates your sky will most likely print white, and this, as I said before, is untrue to nature. You will have noticed the blue of the sky is darker towards the zenith and lighter when it approaches the horizon; therefore we must try and imitate this by what is technically termed "sunning the print," and is performed as follows: Cover up the lower portion of the print, place it in the sunlight for a few seconds, shading it with a piece of cardboard, kept in movement so as to give a graduated tint on the sky—a very slight tint, indeed, is necessary, which can be gauged by keeping one corner covered by the thumb-nail.

Use of the Lens Cap.

Should well-marked clouds appear in the sky at the time of exposure, we should by all means try to obtain them on our negatives by giving the sky a shorter exposure than the landscape. Many ingenious mechanical means have been devised, but a simple method of taking off the cap is almost as effectual. The cap should be taken off by an upward motion and raised and lowered slowly; that is the whole procedure. There is one class of cloud subject which should invariably be taken with the landscape, or, better still, seascape. I refer to sunsets and sunrisings; the former will, perhaps, be more often attempted than the latter. There is nothing very difficult about it, although I am sorry to say it is rarely that we can secure a true impression of the scene. The principal points to be observed are to wait until the sun retires behind a suitable cloud, and to use a small proportion of pyro in the development.

How to Obtain Cloud Negatives.

It is, however, not often that we can obtain clouds of a suitable quality on the same plate as the landscape, therefore we must have recourse to double printing, but before we do this we must get a number of cloud negatives—mind, I do not say one or two, for we should at least have over a dozen; if not, we shall most likely fall into that popular error of printing and perhaps exhibiting side by side two landscapes with the same cloud, an event that could scarcely happen in nature. It may be asked what kind of clouds we are to photograph, and I answer any kind and every kind we can get hold of—cumulus, stratified, wind-blown, mackerel sky, quiet, sleepy-looking clouds; they will all come in useful at some time. Those clouds with the sun just off the angles of view are the easiest to obtain, and, of course, the best illuminated. Use a plate of medium rapidity, by about *f*-22 stop and a slow shutter; use a normal developer, and, so as to get a clear, quick-printing negative, say pyro and soda.

Our friend, Mr. Shirley, advises iso. plates, which, he says, give greater detail, but personally I have found little advantage to be gained, though I may not have carried my experiments far enough.

When photographing clouds the camera should be level or nearly so, with a little of the landscape showing on the negative; it goes without saying that we must have a fairly clear view of the horizon, no poplars or factory chimneys reaching half way up the plate. To steer clear of this difficulty, some people point their cameras at an angle of say 45 deg., but the results are so obviously wrong that I will not stay now to point out the why and the wherefore. These people may be classed with those who gravely advise you to use your cloud negative upside down for a change.

It is necessary that every one attempting cloud photography should be slightly inoculated with the Emersonian doctrine, for his clouds must not be quite sharp. For this reason, in a landscape we generally have the foreground and middle distance sharp, but the distance is out of focus, therefore it stands to reason that the more distant clouds should partake also of a fuzzy nature. I have some pictures by a well-known artist which show this defect very clearly. The foreground is sharp and the rest of the picture out of focus excepting the clouds, which are as sharp as the foreground.

Printing-in Clouds.

Having now got our stock of cloud negatives, we must consider next how to use them. There are several kinds of negatives to deal with, which for the purpose of this paper may be roughly divided into two classes; those giving a perfectly white sky, and those showing a decided tint. The former is the easiest to deal with, so we will take that first. Our iniatory proceeding is to take a print ready for toning in the usual way, then, choosing a suitable cloud negative, place the said print in contact in the printing frame; but, if we made no furthur preparation, the clouds would print on the landscape as well as the sky. To obviate this, we must take a piece of brown paper and roughly tear it to the shape of the sky-outline of the landscape, taking no notice of trees and such like dark objects that project into the sky. If the general objects in the distance are dark, then the clouds can overlap, but, if light, more care must be taken in the printing, and one or two thicknesses of tissue paper must project past the edge of the brown paper; this will soften the lower portion of the clouds; or another way is to keep the brown paper moving during printing.

Should the sky in our landscape negative be rather thin, we must resort to a little dodging, thus: place the back of the cloud negative we intend to use in contact with the film of the landscape, and, taking some Indian ink on the end of the finger, dab it over the high lights of the clouds, softening them off when necessary, then print as before described but under tissue paper or in shade.

Another method is to keep the whole of the sky white by covering it while the landscape is printing, but this requires great care. It should also be remembered that on a hazy day, when we have an undefined horizon, clouds are not often seen in the lower portion of the sky, therefore should be lightly printed. Indeed, in any case do not be tempted to print the clouds too dark. Many a picture is overbalanced by this fault, and though dramatic in its effects, and so takes with the superficial observer, is ofttimes untrue to nature.

I have already mentioned that we must choose a suitable cloud negative, and much depends upon our judgment in making this choice.

Lighting, Balance, and Reflections.

One of the first things we must consider is whether the lighting of the clouds is in the same direction as the landscape. Cloud negatives on films have here a distinct advantage, for they can be printed from either side. The next thing in importance is the artistic balancing of the picture, and in this we have in our hands a power for good or evil. Some few years ago I attempted to put before you as clearly as I could as to what was implied by a true balance of light and shade in a picture, and then went on to mention how clouds could be made to assist that important phase known as breadth in picture-making. To make this better understood, I will instance a photograph of a landscape taken on a bright summer day. In the middle distance is a lake, and on the margin a little nearer at hand to the left is a cottage and a tree. Far away is a range of mountains clearly cut in the sunshine; but, unfortunately, the sky line is too uniform, and stretches across the landscape in a jagged line, cutting the picture almost in two, thus violating all canons of art. We now, by shading a portion of the landscape, print the mountains above the cottage somewhat darker, thus enlarging our mass of shade. We now take a cloud negative, which prints rather darker to the left than to the right, utilizing it as before described, and it is now obvious that the scheme of light and shade we have been aiming for is accomplished, and will repay us for the trouble expended.

If our picture includes a sheet of still water with perfect reflections, it must be obvious that clouds

wind-torn and jagged are unsuitable, but some well-rounded, quiet-looking clouds must be chosen and lightly printed for such a subject. If a portion of the sky is reflected in the water, we must then turn the cloud negative over and print also on the water, and whilst doing so covering up the sky. The film being separated by the thickness of the glass from the print just gives the right amount of fuzziness, but in carrying this out we must be careful to have the true angle of reflection or the critics will be merciless to our faults.

It is scarcely within the scope of this paper (but might with advantage be individually considered) to do little more than mention the meteorological aspect of clouds. For our purpose the mere rudiments would be sufficient, though it would be rather trying to the temper if we were to send one of our pictures to an exhibition and call it an "Early Morning," the Judges awarding it the gold medal, and with a glow of pride and admiration we stand before it and listen to the adulation of others. Soon a rusty old *savant* comes along and gives a grunt of disgust, blurting out, "Why! the idiot has printed midday clouds into a morning picture," and we go home slowly and sadly, hoping that no one else has discovered the fault. But we can console ourselves with the fact that unless we have some scores of cloud negatives with notes as to the time of day and year, aspect of landscape, etc., it would be impossible to use them correctly. This being almost impracticable, we must do the best we can under the circumstances.

Different Forms of Clouds.

It might, perhaps, be advisable to mention the different forms of clouds, and for this purpose they may be classed under three heads, viz., the cumulus, the stratus, and the cirrus. The first is easily distinguished. It is often in grand rolling masses somewhat like mountains and is essentially a day cloud, forming after sunrise, and attains its maximum at noon. The word stratus indicates at once this form of cloud. It generally lies in low horizontal strata, forming in the evening and dispersing with the morning sun, therefore should only be used in morning and evening effects.

The cirrus cloud is of a fibrous nature and takes many forms; it is often called the mare's tail cloud, and is dependent on the state of the wind. These notes, perhaps, are sufficient to indicate the importance of studying the subject from a meteorological point of view.

J. W. Wade.

FERROTYPES.

The Silver Bath.

The silver bath is the most important factor in making ferrotypes. It has received more abuse than any other factor. Every failure is laid to its charge, and yet it is always ready to do its duty if properly treated. It is made by dissolving nitrate of silver in rain or ice water, till it is 45 grains strong. Sun till clear. Filter and add pure nitric acid till blue litmus paper turns slightly red—better too much than too little. I have no faith whatever in a neutral bath. Now to iodize the bath, coat the largest size plate you are using with collodion, immerse it in the bath for an hour or so, and the bath will be ready for use. It will improve with age, and should never be filtered or doctored in any way while in use. With proper care it will work well till reduced to at least 35 grains in strength, and I have known it to work at 30 grains. Two baths should be kept in readiness at all times, then if one fails the other is ready for use. This plan saves much annoyance. The baths should be as large as circumstances will admit—never less than half a gallon. Better a gallon.

The prongs of the rubber dipper should be bent so as to immerse the plate, collodion side down, and prevent the dirt from settling on the face. The prongs are bent by heating them over a lamp and bending to the desired shape. The dipper should also be covered with melted paraffine. It preserves it from the action of the silver.

When the bath becomes too weak from use or fails from some other cause, boil it down to at least one-half its bulk in a porcelain-lined kettle; neutralize with ammonia; add water to make the original amount, and silver to make 45 grains strong; sun till clear again, filter, and add nitric acid as at first, and it will work as well or better than a new bath.

Boiling removes the alcohol and ether that the bath receives from the immersion of the collodionized plates.

After the bath has been removed, as above, a few times it may require more heroic treatment. This is done by continuing the boiling till the water is all evaporoted and all foaming or bubbling cease. The silver is redissolved and treated in every other way as before.

J. R. Swain.

(*To be continued.*)

HIS RIGHTS.

"My price is $6 for a dozen imperials."

"All right. But remember that I'm a baker and expect thirteen photographs."

A TELEPHOTOGRAPHIC OBJECTIVE.

How often one casts about for some help to his jaded vision when much of his study depends on close observation, and many hours are spent straining the sight at what would disclose but little to the ordinary observer. So, I have often felt how glad I would be if I could make my study of the masses underlying yonder Himalayan snow without feeling the whole weight of my study as it were lying about my eyes.

A well-mounted telescope, especially if fitted with a four-sided prism, is an advantage over the opera-glass only in a special sense. There is wonderful accession of matter, but a proportionate diminution of light, and altogether so great a strain on the sight, that to work constantly at it becomes very fatiguing.

Moreover, one needs a certain knowledge of the masses generally and the position taken up by individual features relatively to help in reconstructing the original masses of *granite* and *gneiss* here protruded, to the crystalline forms they constricted into at their cooling, and before the destructive influence set to work which reduced them to their present condition. Closer and more obvious methods become necessary. The isolation of solitary rocks on snowy summits by the telescope informs one largely of its history, and one is thankful for its help as he notes the plans of cleavage disclosed in its frost-ridden disintegration; its ice-worn outlines where it has resisted unknown depths of glacial slag, scored and polished by unestimated tons of attrition. This and many another secret of the domestic rivings of Giant Hynes are so revealed to us, and it behoves one after a year or two of study of this kind to bring matters into train. Every link of continuity has to be sought with such aid to the natural vision as we may have, that for instance yonder solitary peak, which, to the naked eye, looks like a needle, and in the telescope like a gigantic colossus of gneiss, bending upwards and forwards, reaching withered arms to unknown belongings, is but a fragment of the crust which flanked the vanished outline, to which that other rock bears similar witness—that both belonged to such a byegone structure, where *materiel* as detritus and sand now strew the plains of Bengal, while some of the masses which filled the space there vacant—huge rocks and boulders of gneiss and granite, whose individual weight may be estimated in thousands of tons, ice-borne, lie many miles away from those unwearying arms.

But my eyes grew weary and that too soon. So it occurred to me on seeing the Dallmeyer advertisement of their newly invented telephotographic lens, that I had here an instrument to my hand. But there was no one I knew could give me any information in reply to my inquiries, as one or two of my own experiments in this direction gave but poor results, and then I came to think the matter over.

[Not many years ago my eyes sustained a serious injury by straining in the waning ruby light of my dark-room, where my stay was protracted into the evening.]

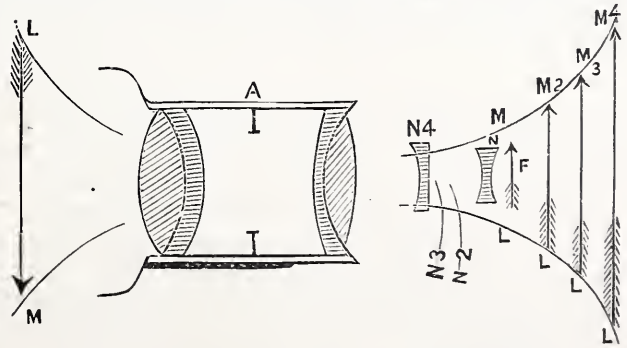
To be able to sit in one's room and observe on a large canvas on one's own easel, and to see depicted thereon with both his eyes the matter he wishes to observe, to sketch a note or measure, to photograph if he please or otherwise deal with the visible phenomenon, was the luxury I pictured to myself as I set to work.

The Dallmeyer objective was out of my reach—not even a descriptive catalogue was at hand—and I thought its constricted aperture would but poorly illuminate my canvas.

If the lens image be thrown on a white card in a darkened room, and a concave lens be interposed between the image and the lens, the former will be affected variously as the negative piece is removed from the immediate proximity of its focus to nearer the objective, in proportion to its concavity.

If the negative piece be weaker, in the sense of being ground to a longer (minus) radius it will lengthen out the focus till it approaches the lens. If of the same strength it will here cancel the obligations of the first lens. So far the combined focus of the series will be that of a lens gradually weakening, and consequently with a lengthening focus.

But if your negative lens be ground to a shorter radius and you start again from the focused image of the objectives, as you approach the objective the focus lengthens out in geometrical ratio with the distance traversed, while the image itself is enormously enlarged, the illumination falling off in proportion to the dispersion. See figure.



A—Portrait lens. N—Negative element. L M—Object. F—Focus of A.

N_2 N_3 N_4 / ML_2 ML_3 ML_4 { Focus varying with the respective positions of N.

L M enclose the extreme rays of an arrow entering the lens A and proceeding to focus at F.

N is a negative piece interposed just before F. The only effect* here is a flattening out of the ray, bringing the focus more into a plane. But as N approaches A the focus lengthens out until when N reaches A the image will be that of a lens having the value of A–N if N be not less powerful than A. While if N be more powerful or strongly concave the neutral point will be reached earlier.

The new image will lengthen out and successively with each approach of N to A will intersect with its focus plane, a trumpet-shaped cone whose sides curve away with sissoidal suddenness. A very slight movement of N varies the focus. A considerably amplified image may thus be produced not away from the dispersing lens.

My result would consequently be controlled by the volume of light I could send through the dispersing lens. I have fortunately one of Voigtlanders rare† $f/1.7$ portrait lens of over 3 inches aperture, and I disperse its flood of light by means of a Darlot negative piece (convexo-concave) of an inch in diameter. This I fitted to the lens tube by a simple contrivance. The centreing had to be true as the least want of identity in the axes of the combined rays threw a curious confusion and dispersion into very far the image.

A bright day had enabled me to set up my solar camera, and it was to this I attached the new contrivance. Placing my easel not far from the lens, and on it a large white board, I had the satisfaction of seeing what a telephotographic lens could do.

The image of the distant snow is clear and sharp. The coloring would be a surprise and a joy to a water-color painter. Those warm, lovely tones among the snow shadows which seem incredable are here so simple. The very surface of the snow might be felt. The fine great treasuries of snow (kangchen jhenga) disclose their unenvied wealth. The snowfields, the planes. The enormous rents and crevices—gaps through which a line of battle ships might disappear, avalanches and their cones of dejection—bare and veined rocks wherefrom the snow and frost glint off at the first touch of the sun. Every distant feature in seeming nearness—one might imagine the very cold of the snow freeze its image into the Canvas.

There was yet another surprise in this connection. On applying a reversing eye-piece to the enlarged oval image a degree of amplification was secured which would rival that obtained in astronomical telescopes of the first order. The magnificent elements of the original lens precluding any chance of distortion.

The isolation of the eye-piece on an iron stand was necessary to get any stability at all, but as the degree of amplification is so thoroughly under control one could well be satisfied with an image more stable even if only a few degrees smaller.

Alexander E. Caddy.

ASSYLINE VILE DAYEELING, 7, ix., 92.

N.B.—I have since found that a double negative lens gives greater power of modifying the enlarged image.

* Prof. Piazzi Smith some years ago proposed this plan for obtaining clear marginal definition in small negatives. His Pyramid Series were, I think, so taken.

†The chemical and visible foci of this lens are not coincident but the difference (about the eighth of an inch) is scaled in the tube. In practice have the difference told off in a special focusing screen.

THE GREAT TELESCOPE FOR THE PARIS EXPOSITION OF 1900.

THE French press is discussing the project of Mr. François Deloncle to construct for the Exposition of 1900 a monster telescope which will give a view of the moon at a distance of one yard. It is also announced that the manufactory of Saint Gobain will be charged with the construction of this crystal mirror, of perfect purity, measuring ten feet in diameter and weighing 16,500 pounds, which will constitute the objective of the instrument to be constructed by Messrs. Loevey and Hervey Bros.

While it is not thought that the promoters intend to mystify the public, and, if we believe the astronomers who have been interviewed upon this subject, it is necessary to diminish the prevision of Mr. Deloncle.

The best telescope constructed up to the present time has a magnifying power of 2,000 diameters, that is to say, that objects can be seen as if they were at a distance 2,000 times less.

The moon revolves around the earth at a distance of 240,000 miles. The instruments in Paris permit a view of the moon at 120 miles. Especially when the air is perfectly calm and the atmosphere has no warm or cold currents passing through it, a circumstance that can sometimes be found in observatories particularly well situated like the one on Mount Hamilton, but which does not exist at Paris, they have been able to magnify 2,000 diameters, which brings the moon within 80 miles.

It is known that the normal magnifying power applied to telescopes is twice per millimetre of the diameter. Then a mirror ten feet in diameter will magnify 6000 times, that is to say, that the

moon will be seen at $\frac{24\,0000}{6000} = 40$ miles and not at one yard. Even to reach this result, the curvature of the mirror must be absolutely regular and it must not undergo any alteration on account of its great weight. It hardly seems possible that this project can be realized.

Allen C. Knapp.

A MODEL ART GALLERY.

WATERBURY may well feel proud of having the finest and best equipped art gallery and photographic studio in New England.

On either side of the entrance to the gallery are specimens of Mr. Adt's fine photographic work, among which are life-like portraits of some of our leading families. The main entrance opens into the art rooms on the lower floor, which are separated by gracefully designed grille work. The wood work, including the counters and a very artistic mantel, is finished in old ivory and gold. The walls are covered with choice pictures of all kinds framed very artistically and in the best of taste. The portfolios are also filled with fine etchings of all sizes and prices and are the works of well-known artists. Besides rare and valuable etchings there are some of medium grade and very low prices suitable for all tastes and purposes. A very fine line selected especially for wedding presents, etc., includes artists' re-marked proofs on parchment and Japan paper, as well as prints. Everything in these rooms is arranged in a manner that shows artistic taste in every detail. The gallery is brilliantly lighted by gas and electricity. The furniture in the reception room is in keeping with the general arrangement of things. Off this floor is Mr. Adt's private office. A stairway leads from this floor to the waiting, operating, toilet, laboratory and framing rooms. The waiting room is elegantly furnished with everything arranged for the comfort of guests. The walls of this room are covered with specimens of the photographic, crayon and water-color work that have given this studio its widespread reputation. The operating room just off the waiting room contains everything in the way of cameras, screens, backgrounds and accessories necessary for the production of first-class photographic work. This spacious room has been converted for this occasion into an exhibition room. Here are exhibited the works of the principal artists in water-color work, giving a great variety of styles and schools. A visit to the framing department will convince any one of the fact that no pains or expense have been spared to make this large room complete. All the latest machinery for the manufacture of picture frames is used here. A separate room for gilding is a feature of this department. A large and choice stock of mouldings including natural woods, gold, silver and white and gold, suitable for framing any kind of picture, are stored on racks convenient to the frame makers.—*Town Talk.*



Notes and News.

Mr. P. B. Green, the veteran photographer of Chicago, died Tuesday, October 25th, of quick consumption. He was buried Thursday, 27th. Mr. Green was one of the best known photographers in Chicago, and leaves many warm friends.

The Practical Photographer of England proposes to issue an American edition at an early date.

Catharine Weed Barnes, after a most successful foreign trip, during which she has spoken at many of the leading British photographic societies, and received many conspicuous honors from photographic organizations on the other side, returned to New York, arriving here Thursday, November 3d.

Mr. W. N. Jennings, the "Lightning Photographer," has been requested by the U. S. Weather Bureau to prepare a set of prints and slides from his lightning negatives to be exhibited at the World's Fair.

Mr. Herbert F. Smith has become Secretary of the Syracuse Camera Club in plase of Mr. Bellhouse, who resigned on account of removal from the city.

Camera Club of Hartford.—The following are the newly elected officers of the Camera Club of Hartford: President, Herbert O. Warner; Corresponding Secretary, Charles R. Nason; Recording Secretary, Robert A. Wadsworth; Treasurer, Fred. D. Berry; Executive Committee—George L. Parmele, A. N. Pitkin, W. W. Walker.

Col. V. M. Wilcox, President of E. & H. T. Anthony & Co., will deliver a lecture on "Personal Recollections of the War," for the benefit of the benevolent society of Phillip's Presbyterian Church, in that church, corner of Madison Avenue and 73d Street, New York City, Friday evening, November 11. Those who have heard Col. Wilcox lecture before will need no inducement to attend this lecture. In addition to being an eloquent speaker he always has something to say which is worth hearing.

Peary's Pictures.—Since his return from North Greenland Lieut. Peary has spent nearly all his time in Philadelphia, developing the photographs he took during his many months of Arctic work, says a letter to *The Sun*. He brought home with him 2300 negatives, which he has now developed with the most gratifying results. The fact that over 2000 of the negatives have produced photographs of superior excellence speaks highly for the good quality of his instrument and for the labor and pains Peary bestowed upon this important feature of his work. It is certain that the pictorial results of no previous Arctic expedition compare with those Peary has achieved. Scientific men who have seen his ethnological pictures say that no earlier explorer ever obtained so fine a series of any native tribe in any part of the world. He photographed the greater part of the Artic Highlanders, the isolated tribe of Eskimos who live nearer the northern apex of the world than any other human beings. He took their pictures in family groups and singly. Ethnologists will be particularly pleased with Peary's large series of photographs of nude subjects. Such pictures, if well taken, are invaluable in the scientific study of new peoples. It is certian that Peary has met with extraordinary success with these photographs. They are so clear and definite in all details that in many cases even every marking in the palms of the hands may be destinctly traced. The nude pictures were taken by flash light, and so were many of the others.

The landscapes are equally striking in their way. They include a large variety of subjects. Greenland may now be known pictorially as it never was before. There are many photographs of deep fiords and splendid glaciers. One fine series represents the bold and striking scenery around the coasts of Inglefield Gulf. The head of the gulf has never before been visited by an explorer, and Lieut. Peary says that the scenery there, with its grim and lofty mountains and mighty glaciers moving down the fiords, is very grand and beautiful. There have been reproduced from Peary's photographs four pictures taken on the northeast coast of Inglefield Gulf. Three views are shown of one of the great glaciers of that region.

One view, taken on the ice at a distance of several miles, shows Sun Glacier and the valley through which it moves from its place of origin on the inland ice cap to the sea. One hardly realizes at that distance that the glacier's face has a precipitous front 100 feet high. This view was taken early last spring when Lieut. Peary saw the region in its winter garb. It was in April last that the explorer, accompanied by his wife and an Eskimo driver, set out across the ice of Murchison Sound south of his camp, to explore Inglefield Gulf, the deepest inlet on that coast. His discoveries richly repaid him for his week of rapid sledging, during which the team of 13 dogs carried the little party 250 miles. On this trip he mapped all the coast and discovered many mountains and glaciers that had never been seen before. The head of the broad gulf will no longer be represented on the maps by broken lines to indicate that the coast has not been surveyed In this view of the glacier the sledge that carried the little party, two of their dogs, and the Eskimo driver are seen.

Another view taken nearer the glacier, but still at a considerable distance, shows the summer aspect of the region. The great ice cap of the interior is plainly in light the head of the fiord. A third view taken near at hand shows the splendid front of the big ice river just as it reaches the sea. Such pictures as this show phases of scenic grandeur that are to be found only in regions of eternal ice. Mt. Adams, a black grim massive, snow-topped eminence, rises 4500 feet above the sea, on the north side of the front of Sun Glacier. The explorer gave to the mountain the name of C. C. Adams, president of the department of geography of the Brooklyn Institute.

Lieut. Peary made a very large series of pictures along his 1300-mile sledge journey to the northeast coast of Greenland, His sledge is seen under all conditions of locomotion. In some pictures the dogs are tugging away at the drag rope. In others two sails well puffed out by the stiff breeze, are supplying a large part of the motive power. Then there are interesting camping scenes and a lot of graphic pictures showing the rough country, barren of ice, where Peary reached the northeast coast.

The large series of photographs showing the Eskimos and their life has been secured for the ethnological department of the World's Fair next year. It will undoubtedly be the most unique and one of the most valuable features of that part of the exhibition.

Photographic Societies.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the society was held on Wednesday evening, October 12, 1892, the President, Mr. Joseph H. Burroughs, in the chair.

Mr. Frederic E. Ives read a paper on the "Heliochromoscope," exhibiting the apparatus and also the special camera in which the negatives, with the necessary triple image taken through a single lens were made. The wonderful results shown excited the highest admiration and favorable comment from the members present, and at the conclusion of the paper the following resolution was offered by Mr. G. M. Taylor, and carried unanimously:

"*Resolved*, That the thanks of this Society be extended to our fellow member, Mr. F. E. Ives, for his paper just read, descriptive of further improvements in his wonderful and scientic inventions of camera and helichromoscope for reproducing the natural colors in a photographic picture."

Dr. C. L. Mitchell showed a portable divided hand camera, made by Ross & Co., of London. Its principal feature of interest and value consisted in its being provided with a pair of matched lenses, one of which was used as a finder projecting an image on a ground glass the full size of the picture about to be taken with the other lens. This arrangement enabled the picture to be carefully focused practically at the instant the exposure was made

Mr. Wm. H. Rau gave a demonstration of the process of making bromide enlargements, using the new apparatus belonging to the Society, in connection with the Welsbach Incandescent Gas Light. In order to overcome the jarring occasioned by heavy machinery in other parts of the building, it was necessary to construct the apparatus with this end specially in view. The stand supporting the apparatus, with the exception of the condensing lenses, rests upon four springs of pure India-rubber. To counteract any motion which might pass through the springs, weights aggregating about 300 pounds rests on the framework of the stand. A second frame is supported on top of the stand on another series of six springs, about 100 pounds of iron weights being placed on this frame. The enlarging camera and board for the paper are rigidly attached to the upper frame. By this contrivance the vibration is entirely overcome, perfectly sharp work being done while the machinery is in active operation.

The Welsbach light used, as described by Mr. Miner, representing the company, consisted of a special burner devised for photographic work, giving a highly actinic light of 175 candle power. By the use of a parabolic reflector, the effective power of this light was greatly intensified, having been estimated at 600 or 700 candles. The burner was claimed to use but about five feet of gas per hour, making it a very economical light for the purpose as well as a very convenient one, as compared with any form of electric light yet devised.

Mr. Frank S. Lewis mentioned that in developing film negatives, lately, he had noticed that on lifting them out of the tray for examination, at the points where the back of the film rested on the fingers, the heat of his hand seemed to be communicated through the film so as to accelerate the development at those points. This was particularly noticeable in the skies of the negatives. He had also noticed that with some plates the strong contracting and adhesive power of the gelatine had caused it to pull off part of the outer surface of the glass around the edges of the plate. This seemed to be due to the glue-like character of the gelatine used, and illustrated the process largly used for producing a peculiar rough-surfaced glass for decorative purposes.

A member asked why in the case of an interior view, which had an hour and a half exposure, a streak of sunlight which could be assumed to be greatly over-exposed, had developed intensely black instead of giving the thin image generally resulting from over-exposure.

Dr. Mitchel thought it came from a second reversal of the image at that point, the usual thin image of over-exposure being again reversed and showing black.

Mr. C. W. Miller said that if an over-exposed negative were developed long enough it would become black all through, as with the streak of sunlight. But, usually with such negatives, they were soon found to be over-exposed and the developer modified accordingly, the development being stopped before intense blackness was reached.

A member stated that in photographing in Florida, the Yellowstone Park, and other places where the sky was intensely bright, the skies were almost always over-timed and thin, and asked for a remedy.

Dr. Mitchell suggested holding the sky back with a color-screen and orthochromatic plates.

Mr. Carbutt recommended washing the plate off when the sky had reached the proper intensity in developing, and then with a tuft of cotton or soft brush continuing to apply the developer to the foreground until a harmonious result was obtained.

Mr. Ives practised another method, which was to reduce the over-developed portion of the negative with Farmer's Solution applied in a similar manner to that recommended by Mr. Carbutt. This he did after fixing, and in daylight, which was quite an advantage.

Dr. Mitchell spoke in high terms of some interior views in the Alhambra, taken by Mr. Cembrano, Secretary of the late Photographic Convention, held in Edinburgh. These pictures had the strongest possible contrasts of light and shade, and he understood they had been developed on the plan described by Mr. Carbutt.

Adjourned.

Robert S. Redfield, Secretary.

NELSON CAMERA CLUB, NELSON, N. Z.

PATRON, His Excellency the Earl of Glasgow, K.C.M.G.; President, C. Y. Fell, Esq.; Hon. Secretary, A. H. Patterson.

The fourth annual meeting was held on June 22, 1892. The report showed that the finances were in a satisfactory condition and that the membership had increased to eight honorary and thirty-six ordinary members. The president referred to the loss the club had sustained by the removal of its late secretary, Mr. F. W. McLean, from the district, and urged members to increased efforts.

During the session 1891–92, the usual monthly meetings have been well attended and the work put in for the monthly competitions has shown that the interest in the club has in no way abated.

The Annual Exhibition was held on September 3d, 4th, and 5th, 1891, and was an entire success. Between 600 and 700 pictures were on view and were much admired; on former occasions admission had been free, but this time it was decided to make a small charge, notwithstanding which the hall was well filled each afternoon and crowded during the evenings. On the first evening the president gave demonstrations of platinotype printing and of flash-light photography, which were attended to with much interest. The second and third evenings, lantern exhibitions of members' slides were given. This being a new departure and the slides being principally of local interest, much appreciation was expressed by the large audiences. Mr. F. W. Holland was the exhibitor.

In December, 1891, a contribution of fifty frames of photographs was sent to the Combined Exhibition of the Otago Art Society and the Dunedin Photographic Society, and met with much commendation from the local press and from the visitors to the exhibition.

The Editorial Table.

Recent Rambles, by Charles C. Abbott, M. D., Philadelphia: J. B. Lippincott Company.

This volume by Dr. Abbott, who has written a number of entertaining books on out-of-door subjects, is by far the most interesting of the series, especially to photographers, as it contains a number of excellent illustrations by photographic processes from negatives made from nature. There are nineteen in number, and many of them are full page in size. The excellent paper on which the book is printed, brings out the half-tone reproductions to excellent advantage, and makes the book an exceedingly attractive one for a holiday gift. The letterpress consists of descriptions of interesting outings, many of them with the camera as is shown by the pictures, and most sympathetic interpretations of the phenomena of nature. Landscape photographers will be particularly pleased with this handsome book. Price, $1.50.

Poems of Gun and Rod, by Ernest McGaffey, New York: Chas. Scribner's Sons.

This is another book which will interest photographers and all lovers of out-of-door life. It is finely illustrated from designs by H. E. Butler, the reproductions being by photographic methods.

The poems are printed on excellent paper in good clear type, and the book is bound in appropriate cloth covers with artistic designs in gold. It is just the book for a sportsman, who also is a lover of books and pictures. Price, $1.50.

"The American Annual of Photography" for 1893, which will be ready on December 1st, as announced, will contain thirty full-page pictures in the body of the book, besides many pictorial illustrations among the advertisements. It will include over one hundred original contributions by the best known photographers, both professional and amateur of Europe and America. Every subject is treated from posing and lighting the subject; the composition of a figure picture; all points of view of a landscape, through developing, printing, and toning to mounting and finishing the perfected photograph. It contains, moreover, many new tables of great value with all the latest and most approved formulas, revised list of photographic societies, record of patents, new books, and in short, everything relating to photography, filling in all more than 500 pages. It will be an indispensable handbook for the photographers, young and old, amateur and professional.

Orders may be sent in for the volume at any time. In paper covers, 50 cents; cloth bound (library edition) as heretofore, $1.00. Postage 15 cents extra.

Queries and Answers.

368 A. B. W., Ohio,—(1) Can you give me directions for transferring photographs upon metallic, curved surfaces like silver spoons? (2) Have you anything new on photo-engraving in half-tone?

368 *Answer.*—(1) Use the Eastman transfer paper. If fresh it will answer your purposes very well. (2) "Photo-engraving" by Charles Schroubstadter. Scovill & Adams Company. $3.

369 S. D. E.—(1) Are bromides developed with hydro quinone as permanent as those with ferrous oxalate? (2) Can you give me, or can you tell me where I can get full and minute directions for the hydroquinone development?

369 *Answer.*—(1) They are. (2) See label on the S. P. C. concentrated hydrochinon developor in one solution.

370 BOSTON.—Collodion and also gelatine aristo paper tones unevenly sometimes, leaving red spots around the edges of the pictures, and sometimes in the middle. This has occurred in the combined as well as in the separate bath. Are these spots in the paper?

370 *Answer.*—These spots are not necessarily in the paper but may be, especially on collodion paper, when its surface has been handled with greasy fingers. The spots around the edges are evidently caused from the paper curling up when in the bath. The edges are elevated to above the surface, and thus escape the action of the toning bath, and when in the middle of the prints, they may come when many prints are toned at once. Sometimes a single print will bulge up to above the bath's surface, and with the same effect.

Remedy: Do not tone more than 4 or 6 prints at a time, keep them moving, and as much as possible submerged.

371 R. W.—(1) You have of late been giving many formulas consisting of so many "*parts.*" Would you please to explain how to determine the proper proportions when some of the ingredients are *solids* (crystals) and others *fluid?* (2) Please explain the meaning of or how to make up 10 per cent. solutions.

371 *Answer.*—(1) Parts may stand for grains, scruples, drachms, ounces, or pounds. It is then left to the convenience of the operator how large a quantity of solution to make. If, for example, the formula prescribes 1 part to be dissolved in 9, and he takes drachms, he will have 10 drachms of solution, and if pounds, 10 pounds. Unless otherwise directed, the Scovill publications have in all cases the ounce to be equal 480 grains, and the fluid ounce that of U. S. measure equal 480 minims. (2) This question has been discussed thoroughly and repeatedly. It has been decided a correct 10 per cent. solution consists of 1 part by weight of the dissolved substance and 9 parts by weight of the solvent, the temperature being of 65 deg. Fahr.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

A LARGE ORDER.

THE Eastman Kodak Co. has just completed a building at Kodak Park for the manufacture of Eastman's Solio paper. The new building has a floor space of 12,000 feet, and was finished in four weeks from the date of breaking ground; the machinery is now being installed and by November 15th the factory will be turning out large quantities of Solio paper, increasing the present capacity about ten-fold.

The erection of this building was necessitated by the enormous demand for Solio paper. Solio was not put upon the market until its practical working qualities had been demonstrated by several months' every day use in the printing departments of the Eastman Kodak Co., but as soon as it was placed on sale its merits were so quickly appreciated by the leading photographers both in this country and abroad that it became evident the photographic fraternity recognized in it: "A superior substitute for albumen paper—free from the defects common to gelatine and collodion papers."

Mr. George G. Rockwood, of New York, is one of the well-known photographers who have adopted Solio, and the following telegram is perhaps the most striking testimonial from among the many good things which have been said for it. It speaks for itself:

NEW YORK, Oct. 22, 1892.

EASTMAN KODAK CO.,
Rochester.

Out of Solio paper. Ordered thousand dozen through Anthony. When can you ship? Answer.

GEO. G. ROCKWOOD.

The plant at Harrow, England, is also being enlarged by the erection of a new building and the output there will soon be greatly increased.

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Seventh.—Because you reach a class of buyers in it, not obtained through any other medium.

Eighth.—Because it is not read and then thrown away, but is preserved and bound, on account of its beautiful illustrations and original information.

Ninth.—Because it contains every week more original information prepared especially for its columns than any other photographic magazine.

Tenth.—Because its circulation is not local or limited, as it extends throughout the entire United States, and goes to both professionals and amateurs.

Eleventh.—Because it circulates not only in this country, but also in Europe and on the Continent.

Twelfth.—Because its pages are double the ordinary quarto size.

Thirteenth.—Because its rates are lower than any photographic publication, considering the size of page and the extent of circulation.

Fourteenth.—Because your advertisement will receive the best of treatment on the part of the compositor, and will be advantageously placed in its pages.

Fifteenth.—Because all its advertisers are endorsed by the publishers as being worthy of patronage.

Sixteenth.—Because no advertisement in any way objectionable is admitted to its pages.

Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

Business Notices.

THE HARVARD DRY PLATE is "The Best". Rapid, Clean, Clear, and Brilliant. Try it!

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Photographie par Emulsion Sensible. A. Chardon, Paris, 1880 10
American Annual, 1887, cloth 50
" " 1888, " 50
" " 1890, " 50
The Porcelain Picture. Towler, New York, 1865. Paper, pp. 47..... 25
Orr's Circle of the Sciences, Vol. VII. (contains "The Photographic Art," by James Martin, 204 pp.). London, R. Griffin & Co., 1860. Cloth, 12mo, pp. 574..... 50
pp. 113, paper..... 10

Odd Numbers and Volumes of Photographic Journals.

Seely's American Journal of Photography, Vol. VI., Nos. 1–19 (July, 1863, to April, 1864).

Humphrey's Journal, Vol. XV., 1863, Nos. 10, 15, 16, 20, 21, 22, 23, 24.

Photographische Monatshefte, Nos. 7–19 (December, 1862, to December, 1863).

The Photographic Times, Vols. III., VI., IX., XI. and XIV. Bound in red cloth, $1 each; regular price, $3.

American Journal of Photography (McCollin), Vol. V., No. 2; Vol. XI. (1890), complete, except Nos. 1 and 4. Vol. XII., except January, February and June.

Bulletin de la Société Française de Photographie. 2d series. Vol. VII., Nos. 1–6.

Anthony's Bulletin, Vol. XIX. (1888), complete, Nos. 1–24.

The Practical Photographer (English), Vols. I. and II. (except No. 18), 1890, 1891.

A few *very* odd numbers of Photographic Notes Daguerreian Journal, Photographic and Fine Art Journal, Magic Lantern Journal, Photographic Herald, etc.

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A smart, active party to take charge of the sales and order department in a photographic stock house; one who has had experience in business, and understands photography, preferred. Address "New York," care The Photographic Times, 423 Broome St., New York.

A young man to take charge of the amateur or retail department in a photographic stock house; one who can make pictures and explain the workings of plates, cameras, etc., preferred. Address "Christopher," care The Photographic Times.

A first-class all-round man; must thoroughly understand dry-plate work, lighting, posing, and fine retouching. The position will be permanent; unmarried man preferred. Beers' Photo Parlors, New Haven, Conn.

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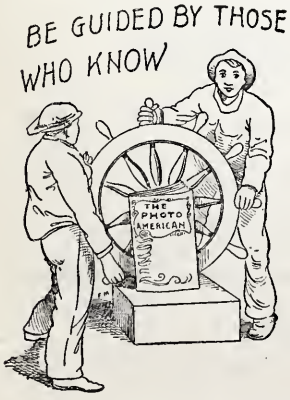
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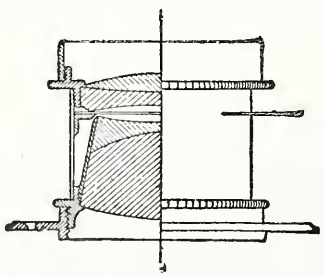
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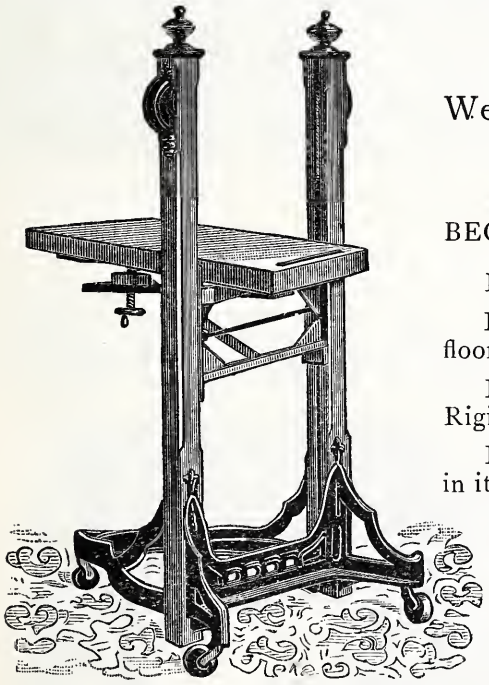
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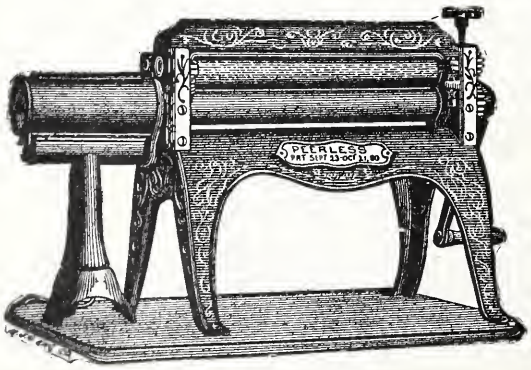
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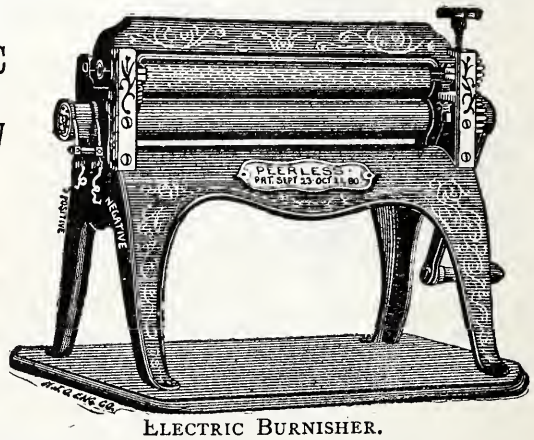
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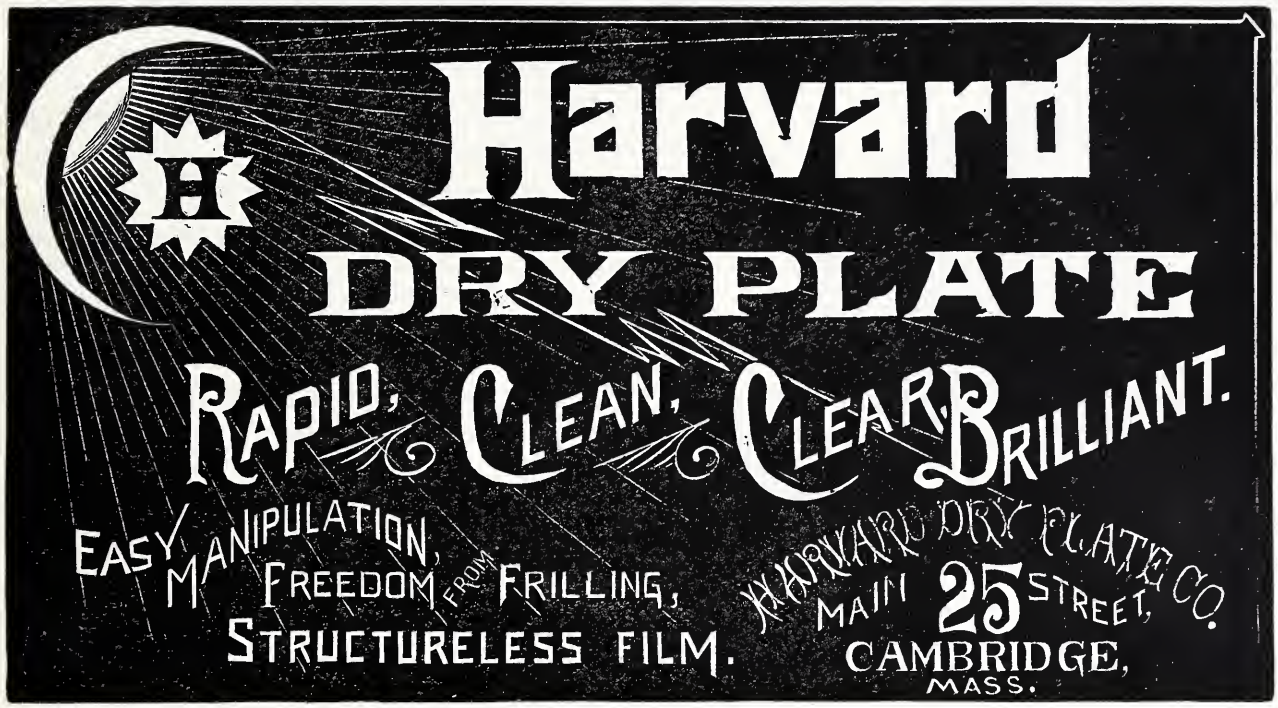
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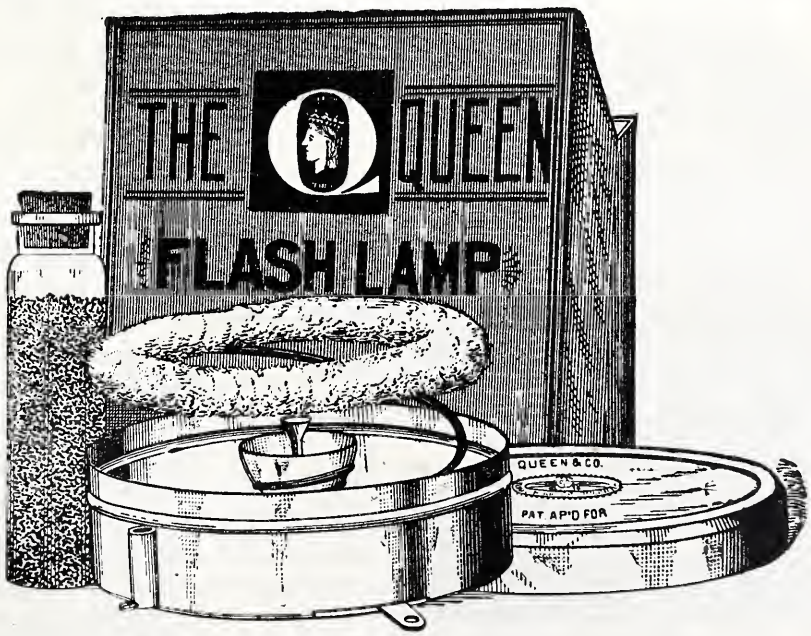
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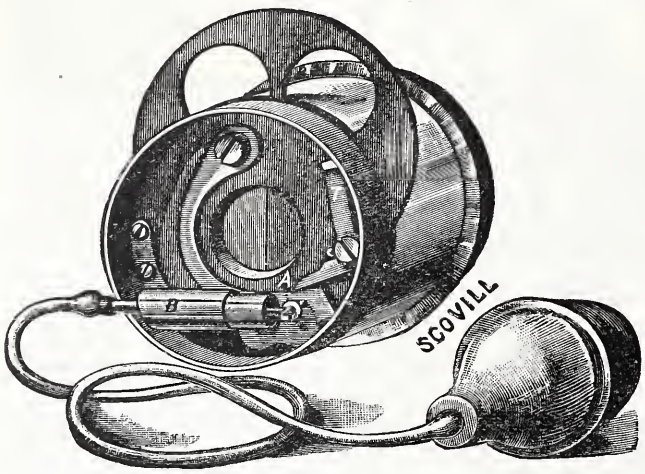
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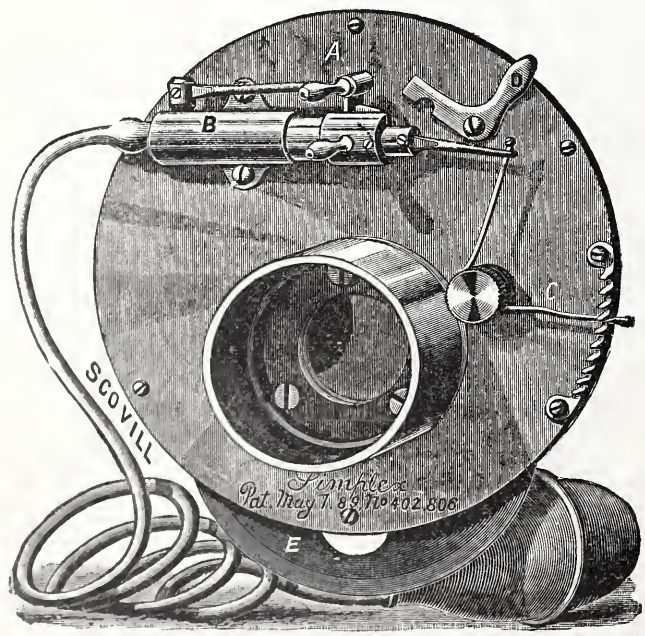
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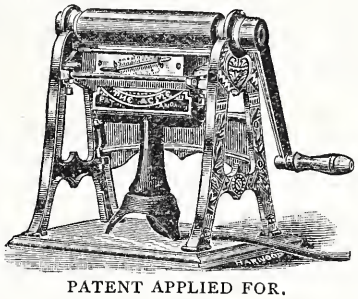
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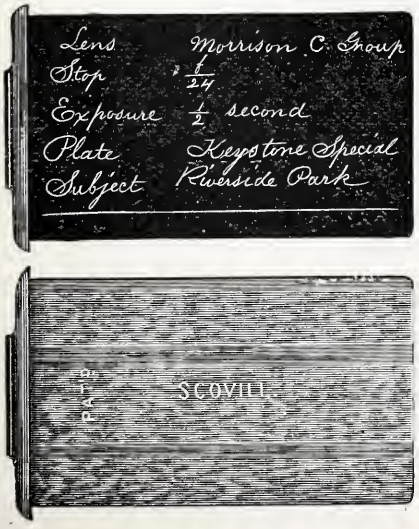
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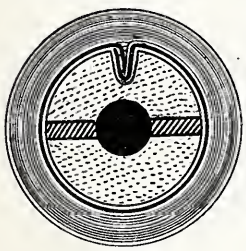
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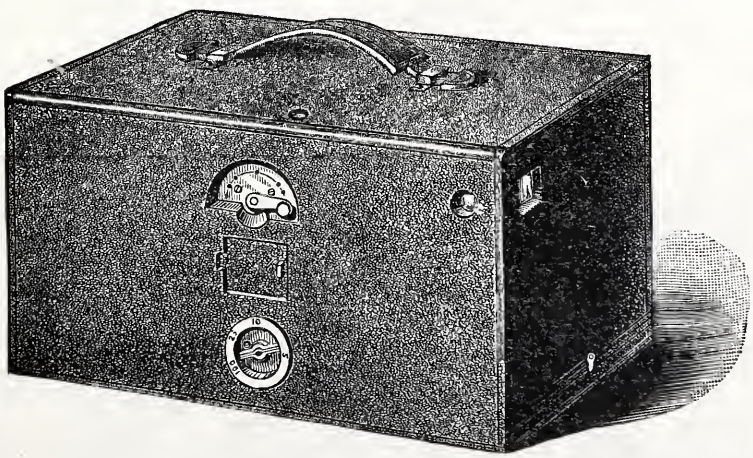
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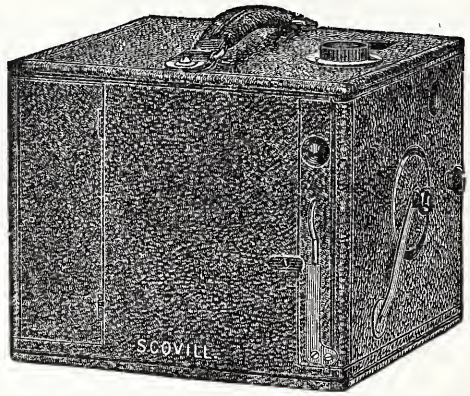
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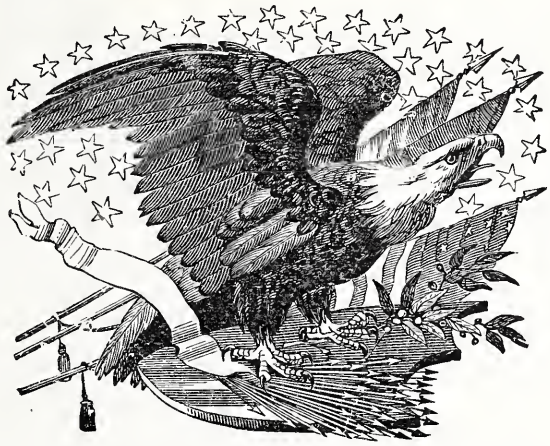
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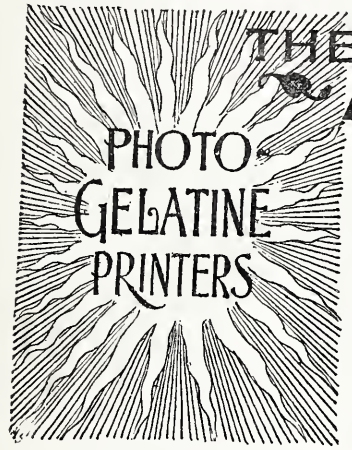


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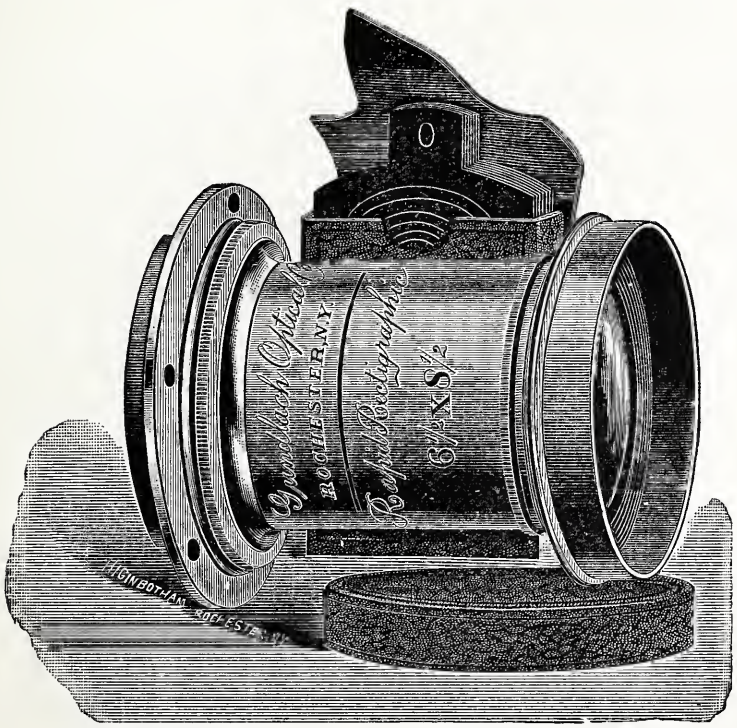
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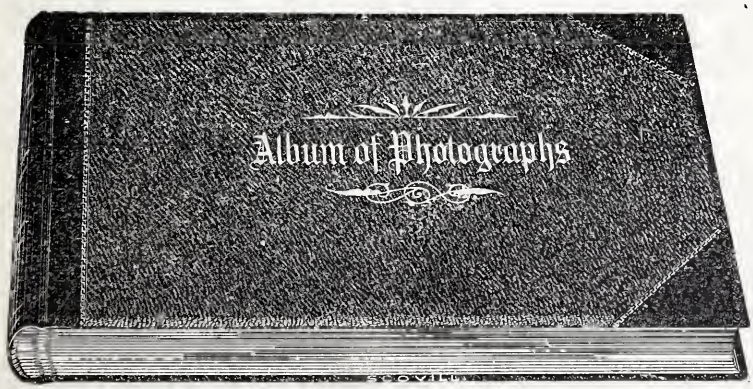
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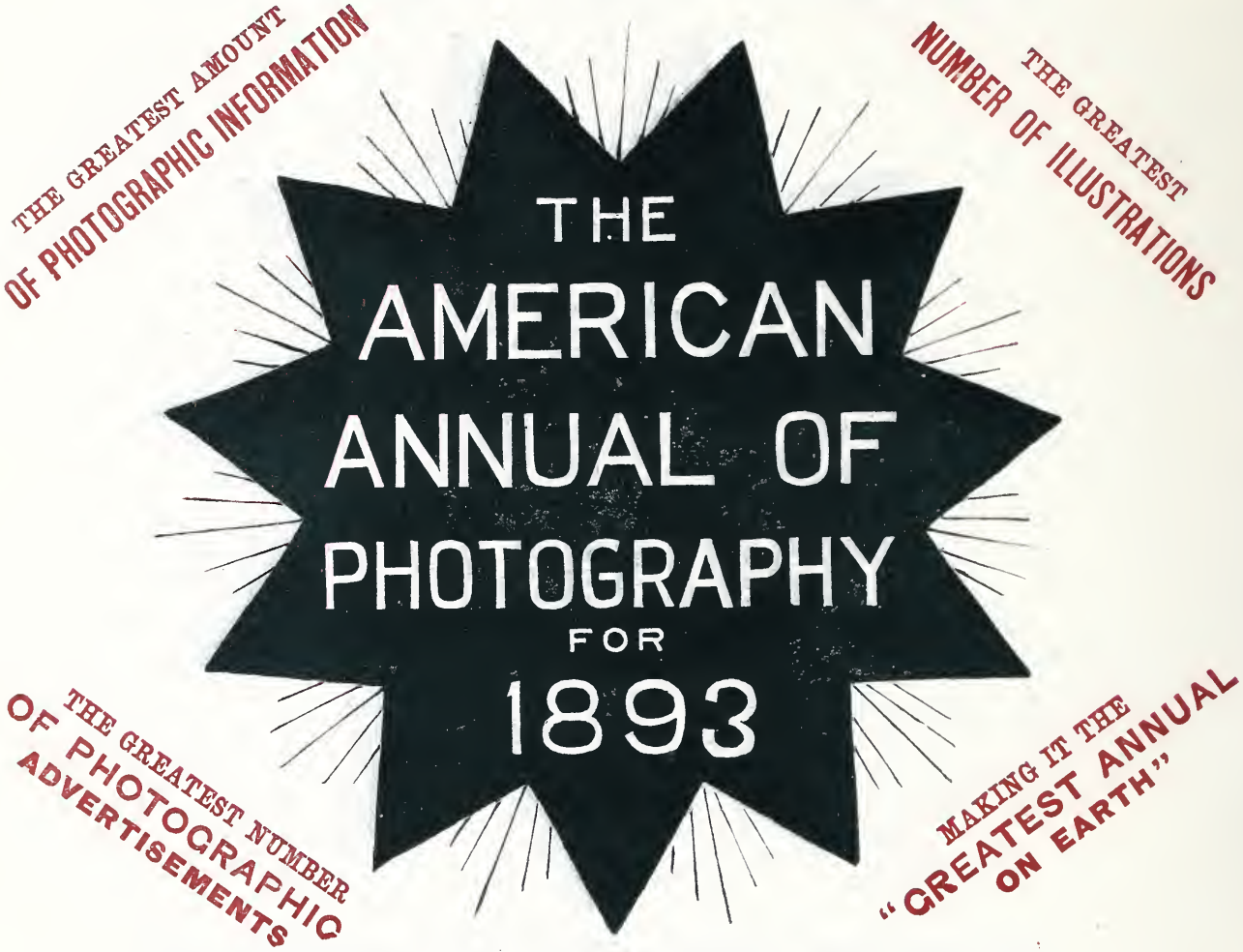
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W. H. PARTRIDGE, PHOTO.

G. M. ALLEN & CO. PRINT.

FRIENDS

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THE PHOTOGRAPHIC TIMES.

VOL. XXII. NOVEMBER 18, 1892. NO. 583.

FRIENDS.

OUR charming child picture this week is from a copyrighted negative, by W. H. Partridge, of Boston. It has been extensively exhibited, and everywhere has met with the highest praise.

The agreeable reproduction by G. M. Allen & Co., now The Alley-Allen Press, leaves nothing to be desired.

EDITORIAL NOTES.

WE HAVE now authentic news of Dr. Fol of Geneva, celebrated for his experiments in the penetrative power of light, who sailed from Havre, March 5th last in his yacht Aster, and of whom it was said he was murdered by the crew when in a state of mutiny. A recent report of the French Navy Department states that the yacht was captured by pirates, destroyed and all hands on board carried into slavery. Whither the report does not say.

Photo. Archiv publishes a new method of intensifying gelatine emulsion negatives, applicable perhaps more to photo-mechanical methods of printing than to chemical silver printing. In one quart of water is dissolved 15 grains of iodine and 30 grains of iodide of potassium and the negative immersed in the solution till the plate turns thoroughly yellow. The picture dark yellow upon a light yellow ground. After careful washing, till the drippings are free from color, 1 per cent. solution of Schlippe's salt made alkaline with a trifle of caustic soda is poured over, and the plate is washed again. The deposit is of a dark reddish brown color and the non-exposed portions are absolutely clear.

HARD ON HIM.

"WHO sent you that comic picture, Mr. Dood?"

"Why, Miss Spry, that's no comic picture, it's my latest photograph!"

"OYSTER-SHELL" MARKS ON WET COLLODION PLATES.

Now, when photo-mechanical printing processes, for which the old wet-collodion plate furnishes the most reliable basis, become more and more popular, the difficulties occurring when negatives or diapositives are made, are as much discussed and the tyro is as much in want of special information, as in the fiftieths of this century, when collodion was a new thing. These difficulties, of which daily complaints are heard, are not of as serious a character as they appear to be, and would not so frequently occur if the proprietors of photo-mechanical establishments did not recruit their forces from the ranks of young amateurs, to whom the collodion process is entirely unknown and who have not the remotest idea how to prepare and keep in working order collodion or silver bath, or how to develop a plate. Far better and more profitable in the end it would be to seek for operators among those veteran photographers whose halcyon days were passed when collodion was king.

A dry plate remains in the same physical condition almost to an interminable extent, whether it rests in the manufacturer's box, or whether it has been exposed to the action of light, and remains in the plate-holder for months or even for years. The wet collodion plate is produced when occasion requires it, and immediately before exposure is made, and developed immediately after being exposed. To make a good plate, and especially one of large dimensions requires the technical skill, nerve, physical power, and a fair knowledge of chemistry of a clever man. With all chemicals in working harmony, and all other conditions normal, the collodion process is easy enough and gives beautiful results.

When a plate is exposed and developed within five minutes after removal from the bath, the re-

Copyrighted.

sulting negative is of desired quality, but when a plate has to stand a long time and when the temperature is abnormally high, difficulties occur, and increase in geometrical proportion. It will be readily understood that in photo-mechanical work these difficulties are enormous, when we consider the long time of exposure demanded by a long focus lens very much stopped down, and the electric light, to which most mechanical operators are compelled to resort, but which by no means can compete in actinic force with daylight. From 20 to 40 and more minutes are the exposures often made. But during that time the silver bath adhering to the plate causes, by drying or evaporating, an endless number of difficulties. Sometimes the silver nitrate crystallizes on the lower end of the plate, making that portion of it useless, or the silver runs down in streaks or tears, the solution as it increases in strength dissolving the iodide of silver and causing pinholes all over the plate or in clusters; zig-zag or waved lines of peculiar form are due to the same cause, or the worst of all trouble, so called "oyster-shell" marks of larger or smaller size are scattered all over the plate, or they appear here and there singly or by twos and threes. These marks are so named because of their very remarkable resemblance to real oyster shells. They emanate from a variously shaped centre and consist of metallically reduced silver particles grouped around it in concentric and parallel lines or bands. When dry, these marks can be wiped off, when it is found that underneath all silver has been taken up, and a bare collodion film is remaining.

The direct cause of oyster shells is not definitely known, but they come invariably when the interval between removing the plate from the bath and developing is too excessive, and the temperature is high. In a portrait atelier, when a regular routine is followed, oyster shells are but rare, unless in cases of difficile women or unruly children, when the plate is standing a long time before being exposed. In all such cases, the late Henry T. Anthony recommended to lay the plate-holder down flat upon the floor, an excellent remedy for small plates. Remarkable to say, oyster shells occur more frequently with large plates. Iodide of ammonium in the collodion is more apt to produce them than iodide of potassium, magnesium or zinc, and according to some experienced operators some samples of acetic acid added to the developer promote them. But drying of the silver solution upon the plate is evidently the main cause. In the development of a wet-collodion plate the presence of nitrate of silver is an absolute necessity, and we cannot do without it. To keep the plate in a moist condition it has been proposed to add glycerine to the bath; that may do perhaps, but then the bath must be acidified with glacial acetic acid, as nitric acid decomposes the glycerine and ruins the bath speedily. Any way it is not advisable to add organic substances to the silver bath. It has furthermore been proposed to wash the silver from the plate before exposure, but then it must after exposure and before development be dipped in a silver solution diluted to one-half or one-quarter the strength of the original bath—a proceeding not very reliable.

As according to our own observations the oyster shell is formed around a particle of some foreign substances that has found its way upon the surface of the plate, and as they are more likely to occur with old baths, impregnated much with iodide of silver and containing a good deal of alcohol, the first and most important advice to avoid them is simply to work with sound collodion and a bath in perfect condition. In this respect as well as in others has here the old collodion operator the advantage.

To keep the plate moist during very long exposure, many remedies have been resorted to. Carey Lea recommends to wipe the plate-holder with a damp cloth, blot off the back of the plate, and place over it a damp piece of blotting paper, bent at the lower end in such a manner as to be touched by the edge, not by the surface of the plate.

Additional to that we have found it very effective to hang damp cloths on the inner side of the camera, and set a black rubber tray filled with water immediately before the place where the plate-holder is inserted.

Oliver Sarony, when making his enormously large reproductions, recommended to blow steam in the camera at intervals of several minutes, but unless the camera is of such immense dimensions as he used, the steam is apt to precipitate upon the lens.

No matter how long the exposure, the air in the camera should be highly impregnated with moisture to prevent oyster-shell marks growing on the plate.

We have tried in the above to describe one difficulty of the wet process, but there is no end of those equally serious and equally important. But the making of a collodion negative of desired quality is only the basis of a photo-mechanical print. To produce prints from them upon zinc or copper, to etch them and to make the final print upon the steam press demands more skill and experience, than is generally believed by photographers, by those at least who wish to change from

silver printing to half-tone engraving as readily and precipitately as they change from collodion aristo to Bradfisch's "Perfected," or any similar gelatine emulsion paper. *C. E.*

ON THE DURABILITY OF GELATINE NEGATIVES.

Photographisches Avchiv is addressing circulars to all its readers and the photographic public of Germany generally, with the purpose to gather from among them information on the durability of gelatine negatives, and similar to those of a few years ago relating to the different developing methods employed by German photographers. The great interest shown in the matter of how plates are developed, will be much increased in the present case, there is no doubt, because the questions now to be propounded are of vital economical and financial importance to all those professional photographers who are called upon to print repeatedly large editions from special valuable negatives. The answers to the questions on developers have shown before all things the veracity of the old German adage, "More roads than one lead to Rome," for although the great majority was still in favor of ferrous oxalate, there were a great many who had been converted to be adherents to pyrogallol, to hydrochinon and to eikonogen, but no matter in which way developing was done, but in a very few instances were the formulas for the solutions alike. The more renowned practitioners, whose productions have become known throughout the world developed all by different methods, nevertheless are their results of equal quality not better or inferior when compared with each other.

The circulars on "Durability" have not yet reached these shores, but it is supposed the questions will touch on the comparative durabity of collodion, and gelatine negatives, on fixing and washing, reducing and intensifying, and on varnishing there is no doubt.

Twenty years it is said, have elapsed since the gelatine plate has been introduced into Germany, a good deal longer than they have been known practically in this country, and when we deduct the two first years of experimenting and groping in the dark, and making generally, but wretchedly poor negatives (I use "we" in a collective sense of the word), our acquintance with these plates can not date further back than about ten years. In 1882 only we had began to make good negatives on gelatine emulsion plates. Rockwood, Kurtz and Gubelman were the only practitioners in New York who had adopted the new plate, all the rest, without exception, employer or employée, looked skeptically upon them, and assailed plate and their advocates whenever an opportunity offered.

We have often made good negatives at that early time, and I have several in my possession made in the previous year just as good as one sees them now, but there are some among them truly in a most deplorable condition, those, especially, intensified by either Abney's, Eder's or Monckhoven's method with mercury, and still worse those with Jastrezembsky gallic acid and silver solution. It is a sad sight to look at these negatives, for they testify to our want of experience at these times and to our ignorance, although others again inspire us with hope and enthusiasm for the then new process. Our negatives of the present time are better and almost thoroughly uniform, and remind us much of larger collections of collodion plates, one like the other, of like intensity, equal transparency and printing quality. But collodion is dead for all practical purposes; still we mourn its loss, as we deplore the death of a dear friend. The gelatine plate is an entirely different thing from that coated with collodion, and to work with it requires more attention and more circumspection, because of the great variety of difficulties, resulting from a variety of causes. Some gelatines are of such difference in properties, as gun-cottons made by different recipes, we have the hard and the soft, some more hygroscopic than others. Emulsion heated to beyond certain degrees of temperature decomposes gelatine partly, and although we know how to harden the film by subsequent treatment, these factors are of influence to the final result. A well-timed and correctly-developed gelatine negative is as pretty to look at as a collodion plate, it prints as well (much better occasionally) deserves preserving as much, and provided all precautions have been observed, keeps as well as the other.

To keep the negative permanently in serviceable condition, be careful of the quality of emulsion employed, develop normally, wash well before and after fixing, renew the fixing bath frequently, and leave the plate remain in it long enough to dissolve all argentic-hyposulphite of sodium formed during fixing.

Finally wash the negative in oblique or horizontal position, and face side down, for at least two hours in running water. When dry the negative film should be protected. Our shellac, sanderac and other varnishes do not answer well for gelatine plates, collodion does better, but best of all is "zapon," known in this country as crystalline, or roxiline. A would-be expert has said, a negative fixed in the acid hypo bath will turn yellow in time.

Correct in a measure, under the same circumstances would the ordinary bath have the same effect. The acid bath retains its clearness almost indefinitely, and often are negatives fixed in it till the solution is so much impregnated with silver that it is almost incapable to dissolve the derivatives of the fixing process. Negatives of that character will turn yellow in light. Or when the developing agent has not been thoroughly removed before fixing in the acid bath, the plate may turn yellow too, especially so with hydrochinon. Such negatives grow darker by frequent exposure to light.

To secure permanency of a negative on gelatine requires no more than the precautions prescribed by any respectable hand-book, circumspection and attention. When bromide of silver paper was first introduced the manufacturers claimed the prints made thereupon to be absolutely permanent, and justly so, as I emphatically say. With the negatives we have no other substances to deal with, why should they not be equally permanent? I have so far spoken of the normal way of making negatives, and fortunately does the majority of our operators know how to work well, but there are others, less experienced, and sometimes necessity compels us to subject the negative to modifications, to reducing or increasing its density, when the whole matter must be viewed from a different aspect. All intensified negatives are subjected to alteration in course of time. About the generally prevailing opinion, I do not share it, for I have two or three made seven years ago last summer, intensified with mercury, print hundreds of copies of them every year, and they are just as good, clear, and free from stain as on the day they were made.

If I must intensify I prefer to all other methods that with iodide of mercury, described on page ~~, "The Photographic Instructor," third edition. If the compound is correctly made, and the hypo solution is applied to the plate after intensification, it will remain clear for a long time to come and will neither lose intensity nor turn yellow. With mercuric chloride and subsequent treatment with ammonia or with a sulphite, with gallic acid and silver, with Schlippe's salt or with iodine, the negatives will turn yellow within a short time, if not so at once, on application of the intensifier. With some of these methods intensity increases by and by, with others it decreases, and of the latter being that with uranium nitrate.

To reduce density there is, after all, no better method than Farmer's, with ferricyanide of potassium and hypo. By means of the former salt, the gelatine film is fortified, and that is a great benefit in this case. I have not yet found a negative reduced by these means altered in appearance and printing quality.

The greatest dangers to the permanency of a gelatine negative are improper fixing and washing, and injudicious intensification. Improperly fixed, it will turn yellow on exposure to light, but superficially washed after fixing, the hypo will crystallize within the film, its sharp crystal points break through the gelatine, and detach it in scales from the glass support, not thoroughly washed out, the hypo remaining will under the influence of moisture, light and heat lead eventually to the formation of silver sulphide and yellow stain, especially when the plate is not varnished, and is almost in constant contact with free nitrate of silver when printed from on silvered albumen paper.

It is dangerous to the negative to dry it by means of alcohol. Unless the plate is heated afterwards, alcohol will remain within the film and detach it ultimately from the glass support.

There is not the remotest reason why our gelatine negatives should not be as durable as those made on albumen or on collodion films, or our bromide prints, and if they are not it is our own fault.

Charles Ehrmann.

IMPROVEMENT IN PHOTO-ZINCOGRAPHY.

As with other industrial work, a desire to improve has been also manifested in the art of high relief etching on zinc; we want to print from such plates rapidly and cheaply, and the final results are desired to be beautiful, and of highest quality.

In autotypy, and other similar work of the best kind, direct copying upon zinc has been the generally adopted method, but there is now a tendency in all our most important reproduction ateliers to supersede it by a better method, by transferring copy on photo-lithographic paper upon the zinc plate, instead of making a direct print.

The reason why a formerly recommended transfer process has never been entirely satisfactory is obvious. With it a paper copy is developed with fatty ink, the color transferred on the zinc plate, inked with sponge or roller, and to resist the action of the etching acid, dusted in with asphaltum. But transfers of this description are never decidedly sharp, neither can they boast of those finer details so much desired; hence has the process been but little practised. Moreover are experienced workmen but very rare, and to train young men for any

particular sort of work has its many difficulties, quite well understood. The process has been applied to inferior work only, because the final result could never compare with that of direct printing upon the metallic plate.

Recently things have taken a different turn, and by a more simplified process, and with a much improved and superior transfer paper, it has become possible to transfer copy as sharply and detailed as a direct print, and, what is very important in saving of time and labor, any number of perfect copies may be transferred on one large zinc-plate, and they all be etched at one time by one operation.

Of one of the several methods adopted by many of the larger European ateliers, let it be sufficient to give for the present an outline sketch only: A photo-lithographic copy is printed, as usual, developed as usual with fatty ink, and dried. The drawing is afterwards dusted in with a finely pulverized mixture of 10 parts of asphaltum and one part of pure beeswax, and all superfluous asphaltum removed by means of a fine camel's-hair brush or a tuft of cotton, and slightly heated over an alcohol lamp to melt the asphaltum together with the fatty ink. The copy is then passed through a saturated alum bath, to keep it uniformly moist, laid between sheets of moistened blotting-paper, and finally transferred upon a zinc-plate.

Ink and asphaltum combined transfer well. After protecting back and the margin of the plate, it is ready for the first etching.

I will be pleased to give detailed descriptions of the process and samples of transfer paper free of cost, to any American photo-engraver, interested enough to try it.

August Albert.

ON DEVELOPING PLATES IN VERTICAL POSITION.

In the Photogrammetrical Institute I have the honor to conduct, a method of developing plates in vertical position has been adopted for the last three years and has proved to give highly satisfactory results, thoroughly developed plates with all possible details, whether the exposure had been four hours or four seconds. Professional photographers who, after the experience of years, have become well acquainted with the light of their glass houses, may, perhaps, not be enthusiastic for the method, but it is nevertheless of greatest advantage to the *savant* or the artist, who in scientific researches, or in artistic efforts are not always master of the situation, and cannot pose, expose, or illumine the subject at will. To the amateur who handles the camera for pleasure's sake, vertical development is also important, for the number of accessible subjects is thereby much increased. The nature of the method consists simply in the very long continued action of an enormously diluted solution, the plate being held in a grooved and vertically erected vehicle. The advantages offered by pyrogallol are great, and all the newer developing agents experimented with, which for the present have been set aside, have not been able to supersede it in photogrammetrical work at least. Let it be admitted that they have given satisfactory results by vertical development, but never in such dilute solution as pyrogallol, the most reliable developer, and the cheapest after all can be employed. With other developers, with almost every one of them, a point is arrived at, when action ceases, and the plate begins to fog; with pyrogallol fog begins to show after an extremely long action, and when in consequence of abnormal exposure nothing more can be coaxed out of the plate. For these reasons may pyrogallol be considered, not an absolute necessity, but certainly the most suitable substance to develop plates in vertical position.

The advantages of the method are:

Careful and anxious watching of the development of a number of plates; very tedious work according to the old method, has been changed to patiently waiting for the result.

Immediately after all the grooves of the vehicle are filled with plates, to avoid streaks to occur, when left entirely to themselves,* the first plate inserted is lifted out, examined, turned and reinserted, then the second, and every other one is similarly handled. It is in the first stage of development when real trouble may occur, namely, through the sudden and uncontrollable appearance of the image with excessively over-exposed plates. With correct exposures no effect can be produced within the short time. With the ordinary method of developing very much over-exposed plates may be a total loss; with the vertical there is a possibility of saving them.

Dr. A. Meydenbauer.

(To be continued.)

THE RIGHT PLACE.

"I wonder why it is that Cholly is so fond of lingering in art galleries."

"Oh, Miss Spry once told him that he was a whole picture in himself and so it's quite natural, I think."

* These streaks are of peculiar nature. I will speak of them on another occasion.

THE "THOMAS" SANDELL PLATE.

[Written for the "American Annual of Photography and Photographic Times Almanac for 1893," but received too late for publication in that volume.]

Halation or Irradiation so much dreaded by interior and landscape photographers, is not necessarily destructive to a negative upon which it has appeared, but is certainly detrimental and increases very much the difficulties to print from.

The effect is produced by light reflecting from the glass side of the negative, and occurs unavoidably, when by interiors for example, the instrument is erected opposite an uncovered window, when burning lamps or gas jets come within the picture or when magnesium flash light is reflected from windows, mirrors or highly polished metallic surfaces. A bare, shapeless spot is the consequence. The contours of a tree against a white cloudy sky disappear almost entirely or become visibly weakened, because light invades from all and every direction.

All conditions suspected to lead to halation of the plate are therefore carefully avoided, or the glass side of the plate is covered with a light absorbing, not reflecting medium. The more or less the index of refraction of this medium corresponds with that of the glass, the better or less so are the results. Aurine collodion with a trifle of castor oil is probably best adapted for the purpose. To paste black paper on the reverse side of the plate has no effect, but backing up of plates being a very tedious and laborious operation, has not been universally adopted.

R. W. Thomas & Co., of London, have recently introduced a plate, not only entirely free from halation under any circumstances, but they also permit greatest contrast in the illumination of the subject. Deepest shadows in close juxtaposition with brightly illuminated portions, are with these plates reproduced with the most delicate details, impossible to obtain equally well with any of the ordinary emulsion plates. To over-expose Sandell plates does but rarely occur, if at all.

For fear of under-exposing landscapes or interiors, amateurs, and many professionals too, over-expose invariably. As a rule, over-exposures are not of great moment; in some instances it is even advisable to over-expose, and to over-expose much, as with a properly adjusted developer harmonious negatives may result from it, when other methods fail to reproduce what is desired.

The Sandell plate in regard to long exposures is far superior to the ordinary kind. With an ordinary plate overexposed lights or shades, or the contrasts between the highest lights and the deepest shades may at the cost of some of the finer details be regulated by restrained developers, but the shadow portions are apt to become bare, and the high lights be gray, losing in consequence the brilliancy of the negative. With the new plate the contrasts harmonize, the lights remain white, and the finest details in the shadows are brought out. All this might possibly not appear as striking as it really is, were it not for the enormous latitude of exposure permissible, and the possibility to harmonize the greatest contrasts.

Contrasts will never appear as great in nature as they do in a photograph, or we do not become conscious of, and our eye accommodates itself to this in a similar way, as we see near and far off objects of equal sharpness. If, for example, we look through an open window upon a sun-lit winter landscape, and then turn the eye suddenly upon a piece of dark furniture in the room we will see the slightest depressions or elevations on the snow-clad ground as well as the carved details of a dark chair or cabinet. But were we to photograph these two subjects the effects on the plate would be very different. With a short exposure the snow scene would probably come correct, but the same time of exposure upon an object in the dark-room would scarcely give its outlines, not to speak of details, and when we expose sufficiently long upon the object of the room, developing all its details, the snow landscape would be enormously over-exposed and all effect be destroyed.

Such can never occur with a Sandell plate. In landscapes and in interiors, the exposure is always made for the deepest shadows, without regard to the high illuminated parts. There is no fear of over-exposure or a reversal of the image, so frequently occurring with ordinary plates.

The old collodion doctrine, "Expose for the shadows, and let the lights take care of themselves," seems to be revived.

When a lace curtain, hung before a brightly illuminated window, is photographed upon an ordinary plate, texture and detail of the fabric disappear entirely, and in its place is a halation mark covering the whole space of the window. With a Sandell plate the finest details are preserved and developed.

The cut accompanying these remarks illustrates well the capabilities of the Sandell plate. The picture represents the interior of a church. In Fig. No. 1, made on an ordinary plate, a large blur or halo is observed on its centre. In No. 2, made upon a Sandell plate the large window, the altar underneath, and all dark portions are reproduced with detail. Naturally can the finer tone grada-



Fig. 1.—Ordinary Plate.

Fig. 2.—Sandell Plate.

tion not be as well reproduced in a half-tone photo-engraving, as in a photographic print, but the effect is sufficiently well observable.

Sandell plates are made in two different grades, general and especial. The former are coated with two strata of emulsion of different sensitiveness, the especial are coated with three. To determine upon the exact degree of sensitiveness of each emulsion in relation to each other has required long and extensive experimenting. The individual emulsions are made and washed separately, and alkali added to them. The glass is first coated with an emulsion of low sensitiveness and upon that emulsion of highest degree is spread. The especial carries between them a third of medium degree. It will be at once observed that the whole mystery rests with this arrangement. The substratum emulsion has the same function as the light-absorbing coat on the glass side of an ordinary plate, but acts more efficaciously. Light is here entirely absorbed, which is not always the case with a backed-up plate. Had the upper stratum been exposed long enough to become partially solarized in the higher lights, and which would produce a thin and feeble negative, the light-rays in continuous action affect the lower film, and by decomposing the silver haloid therein contained, restore the intensity lost in the upper stratum, while those rays acting comparatively with but little force in the half-tones and middle-tints leave these portions clear and transparent after the plate has passed through the fixing bath. It will be easily understood, that the most powerful light-rays cannot simultaneously decompose the first, second and respectively the third emulsion films more rapidly than is necessary to reproduce in full light value the most delicate details in the middle-tints.

For this reason does the Sandell plate allow such an enormous latitude in exposing and developing.

The "general" plate, marked by the manufacturers = 28° W. is well adapted for general work for portraits, landscapes, interiors or wherever contrasts of light and shade are to be reproduced. The "especial" of the same sensitiveness is intended for difficult work, or where light and shade contrasts are highest. Both brands require the same treatment. The exposure must be full and to correspond with the depth of shadows to be reproduced, and be much longer than with an ordinary plate under the same conditions. How long exactly to expose is impossible to state by established rules. The latitude of exposure is enormous, over-exposure being almost impossible to occur.

For the development of these plates we may employ any of our old or new media, pyro or hydrochinon, eikonogen or para-amidophenol, metol, glycerine, amidol, in fact any thing that will develop, but a compound prepared by the manufacturers of the plate and named "crystallos" is claimed to be most effective.

Whether the exposure has been timed or instantaneous the method of developing is the same. By no means must the plate be washed before developing, and by no means must the developer be of reduced concentration, as in some particular cases is done with ordinary plates. It should not be expected to see the developed image on the reverse side of the plate, one or possibly two strata of emulsion intervening between glass and the superstratum, upon which light has acted but little, or not at all. Density of the negative must be adjudged by transmitted light only, and as the lowest stratum of emulsion is of but low sensitiveness, the plate may be examined in close proximity to the ruby light.

In case the exposure is excessive, when the image appears immediately on applying the developer, and when the half tones begin to darken prematurely the same developer without any modification must be adhered to. After developing of the upper film has been completed, the normal solution continues to act at the same ratio upon the lower. Has light acted upon the second and respectively upon the lowest emulsion stratum the image becomes visible upon the glass side of the plate. Plates of such character require clearing. After fixing and without being washed they are subjected to a bath of ferricyanide of potassium 1 drachm in 16 ounces of water. Is excessive exposure suspected, the clearing bath may be dispensed with, when the usual amount of bromide of potassium is added to the developer.

The negatives must be well washed after development, and be fixed in a hypo solution 1 in 5 of a temperature not less than 60 deg. Fahr. General plates fix in about 5 minutes, especial in 8 minutes; fixing must be done in the dark-room. Sandell plates require more careful washing than ordinary plates. After fixing they should be soaked for one hour in pure water, and in vertical position, and then washed in running water, the general for one hour and the especial for two.

When an alum bath is used after fixing, the plate should remain in it but for a short time, not longer than five minutes. Alum may contract differently the gelatine of the different emulsions, and thus produce double contours of the image. The same has occurred by hastening drying of the plates by means of alcohol.

The high price of the Sandell plate may be objectionable to the consumer, but when we consider how many ordinary plates are wasted by over-exposure and by halation, and that the results upon them are so very superior, their cost is reasonable, comparatively low.

The Sandell plate may possibly not always answer to artistic demands. At times halation is not objected to, and a halo is often said to produce artistic effect. The picture approaches then the realistic and artistic truthfulness, to which the photographer will submit cheerfully.

Charles Scolik.

COMBINATION NEGATIVES.

[Written for the "American Annual of Photography and Photographic Times Almanac" for 1893, but received too late for publication in that volume.]

WHILE it is quite true that the photographer, unlike the painter in this respect, must have his model or subject before him when he produces his picture, there is a class of photography of which this is true in only a limited degree. I refer to compositions printed from more than one negative. The artist, when out with his sketch book aims at having it stocked ere his return with all the raw material requisite to produce his complete picture, introducing one or the other item—a tree, a bridge, an old mill, children, animals, boats or rocks, according to the dictates of his taste or fancy.

There is very little of this combination art work done in photography at present, much less than might be. And yet in these days of film negatives there is no insuperable difficulty involved in the mere mechanical part of this class of work, while immense scope is afforded for the display of art feeling. I am not now referring so much to combination *printing* as to combination *negative making*. Nearly every user of a camera occasionally practises the former, even if only to the limited extent of printing a landscape from one negative and adding thereto a sky from another. I had a friend, Ramage, of Edinburg, lately deceased, who was quite an adept at the production of combination negatives. He was the chief of the art department of a large firm of publishers, and I have often watched with admiration the rapidity and skill with which he would build up a negative, pictorially perfect, from a variety of smaller studies and scraps. Given an empty harbor, and he would quickly enliven it with shipping of every nationality, together with pleasure boats, fishing boats and steam launches. Or if the scene embraced a lonely road or street, the necessity for the creation of vehicular and foot traffic was scarcely sooner thought of than it was put into execution.

Hanging on the wall of the parlor in which I write this is a London scene, representing a subject dear to the heart of the archæologist, the elder Rouch's photograph of Temple Bar, taken long before it had to succumb to the necessity for widening the street and increasing the facilities for thoroughfare. In those days of the long ago a busy street had either to be taken instantaneously, which was then impossible, or by using an exceedingly small stop in the lens and giving an exposure so long as to ensure all life being blurred out of existence, the case with this picture. But by borrowing a few carriages, omnibuses and foot passengers from another and more modern negative, and temporarily attaching them, I at once impart life to the empty street, and under the scene both more truthful and more interesting. Realism and truth are not necessarily convertible terms; and if pictorial effect be the ultimate aim, it is not necessary that either of them be paid much attention to. But, and still harping on Temple Bar, I contend that both qualities are imparted to it by the additions named. An artist would laugh at the idea of being debarred the liberty of removing any offensive tree or other object from his composition, or of introducing something more conducive to artistic effect. If the introduction of a cottage, a cow, a cart, or even an entire farm yard will enhance the effect, in with them.

But *how*, as applied to the building up of a negative? One example will suffice. Here are two negatives, one is that of a child standing against a sharp and strongly marked brick wall in London, the other being an orange grove in Florida. A camel's-hair brush is charged with a solution of iodine in cyanide of potassium and gum enough to prevent spreading, and is passed around the child, Water is now copiously applied, when the brick wall is found to be entirely obliterated, leaving the child untouched. The film is next removed from its glass support, which would be unnecessary were it taken on rollable celluloid, and the Florida negative is superimposed in a suitable position, when so much of the Southern scene (in this case a live oak enriched by Spanish moss) as interferes with the figure is neatly and accurately removed by the iodine and cyanide solution. After the requisite washing the figure negative is transferred to the other or face side of the larger one, and when accuracy of position and fitting is found to have been ensured, it is permanently attached by any suitable adhesive. The combination negative,

subject where necessary to retouching, after being varnished is now ready for the printing frame. It need scarcely be said that harmony in the relative dimensions of the objects and in the lighting must be insisted upon. *J. Traill Taylor.*

GELATINE VS. STARCH AS A MOUNTANT.

THE majority of photographers employ starch paste for mounting pictures, while professional print-mounters, as a rule, use gelatine, or more often, perhaps, common glue. Several have at times remarked to us that they would prefer gelatine as a mountant if it were not so difficult to manage. In practice, however, when the proper conditions are understood, the difficulties prove more imaginary than real. It has frequently been stated that prints mounted with gelatine last longer than those mounted with starch. This is probably the case when the mounts contain injurious matters, as the layer of intervening gelatine is a better insulator than one of starch. This better insulating property is also a great advantage with some of the deeply colored mounts in which the coloring matter is partially soluble in water. If with such mounts starch be used, there is a danger of the whites in vignetted prints becoming stained, whereas, if gelatine be employed, the trouble will, except in very bad cases, be avoided, because before the pigmented coating on the mount has become fairly wetted the gelatine has set, and, so to speak, formed a protecting layer.

Many who have tried gelatine as a mountant have failed to use it successfully. The failure, however, can generally be traced to one or other of two causes, or, perhaps, the two combined. The first is the employment of an unsuitable gelatine; the second, using too thick a solution. Some would consider that for the present purpose the highest class of gelatine should be employed. This is a mistake, for the very lowest is by far the best for the work. If a solution of one of the highest qualities of gelatines, such, for example, as those used for dry plates, be made and applied to the back of a print, it will be found that before the whole can be evenly coated, even when its dimensions are small, that which was first applied has set, and when once it has set it has lost the greater part of its adhesiveness, and can then only be made to adhere, if at all, by heavy pressure or hard rubbing, This trouble may to a certain extent, it is true, be mitigated by diluting the solution, but it does not overcome it.

If, instead of using a gelatine of the character just referred to, we take common glue, as sold in the shops at a few pence a pound, and make a solution of that of the same strength as the gelatine, and use it at a similar temperature, we shall find no difficulty in coating even large prints before any portions begin to gelatinize. For this reason common glue, in practice, proves more adhesive than the finest quality of gelatine. Reference has just been made to failures arising from the employment of too strong a solution. The stronger it is the quicker it will set, while very dilute solutions will require a comparatively long time before they will assume a jellied condition. So adhesive is this material, that those who have not tried it will be surprised how weak a solution of common glue will serve for sticking papers together.

Reference has been made to common glue; but, be it understood only as an example of its properties as compared with those of the best gelatines. It will be manifest to all who know anything of the subject that is employment for mounting silver prints should be eschewed if their permanence is a consideration, owing to the impurities with which it is always contaminated. It is, also, almost invariably acid, as indeed, are the highest qualities of foreign gelatine, which, quite apart from their quick-setting properties, render them unfit for mounting photographs. It will now be seen that what is required for the purpose is a pure kind of gelatine with the mechanical properties of the common glue. This we can obtain in some of the gelatines of British manufacture. They are known commercially under the name of "soup gelatine" or "soup strengthener." Nelson's, Cox's, and other firms supply such gelatines, and they can be relied upon, while, at the same time they are very inexpensive. The first-named firm also supply a gelatine known as "No. 2 soluble." This is an excellent gelatine for the purpose, as it combines purity with slow-setting properties. It may almost be taken for granted that English gelatines of fair quality are always neutral, while foreign ones are invariably acid.

It is impossible to give a definite formula for making a solution, as different samples of gelatine vary so much; but the weaker it is, so long as it will stick, the more convenient it will be to use, and the less heat will be required to retain it in a fluid state. As a rough guide, it may be mentioned that such a proportion as will form a weak, though not too tremulous, jelly after standing in a cool place all night, will be found most convenient in every way. It may also be mentioned in connection with the strength of the solution that the more dilute it is the shorter will be the time it will keep without decomposition. Hence it is desirable, when preparing several days' supply, to add an antiseptic, such as a few drops of oil of cloves, or, better still, a little methylated alcohol. Alcohol can not only be used as an antiseptic, but it can be made largely to take the place of water in the solution. An adhesive, so prepared, is extensively used for mounting prints on boards with a clear margin so as to avoid the cockling of the mount; but, as this portion of the subject has been so frequently dealt with, it need not be referred to on this occasion.

One other matter may, however, be alluded to in connection with the use of gelatine—namely, mounting photographs in optical contact with glass. Some have employed the higher classes of foreign gelatines on account of their whiteness and transparency. To this fact may be attributed the difficulties many have experienced in the work, and also the existence of so many fading pictures. These gelatines, as we have just said, are difficult of application, and, by reason of their acidity, conducive to fading. However, by employing the class just recommended these inconveniences are avoided, while the purity of the whites of the prints will in no way suffer from the apparent slight opacity and trifling tint of the gelatine.—*British Journal of Photography.*

A FAVORED INDIVIDUAL.

"It's a pity we have to wait for winter to go tobogganing."

"That's where the photographer has the best of us—he has his slides all the year round."

POLYCHROMATIC LANTERN SLIDES FROM UNCOLORED PHOTOGRAPHS.

THE following is a *résumé* of a paper read before the Photographic Club of Paris by our French correspondent, M. Leon Vidal:—

Inspired by the suggestions published in 1869 by C. Cros and by L. Ducos-du-Hauron, I have attempted to realize them in applying the principle to the production of polychromatic lantern slides. This I have done by selecting the colors by the aid of plates endowed with special sensitiveness. This particular application of the method has not before been made, or, at least, published, by any person in France.

C. Cross, in his pamphlet, entitled "General Solution of the Problem of Photography in Colors" (1869. Gauthiers-Villars), says: "People must not be astonished if I do not carry out the results which they have expected, and if I do not try myself to carry out my idea. I have had, neither in the past nor the present, any means of realizing my wishes. To seek these means would be to me a great expense of time and labor, an expense which would be followed by much practical work. This is not said in order that anyone should come to my aid. I have no very lively wish to make use of these means; it is rather more my habit to pursue general scientific problems than particular results. The solutions that I have found necessary for solving the problem of photography in colors I give at the end of this volume, for I have not made any commercial reserve of the right. Thus, the specialists, the able experimenters, will be in no wise hindered in their research."

It will be clearly seen from the preceding extract that C. Cros had in no way practised the theory published by him.

I have also endeavored to learn from M. L. Ducos-du-Hauron himself if he, on his part, has made any application of his idea of polychromatic lantern slides, published in his memorial in 1869, entitled "Photography in Colors: Solution of the Problem" (Marion, editor). He writes to me from Algiers under date March 18, 1892:—"The principle of lantern slides in colors which I indicated was, it is true, experimented upon and verified by myself: but in order to produce them before the public in a complete manner, it would have been necessary to design special apparatus for their exhibition. It was because of this necessity that I renounced the idea."

It is then well established that L. Ducos-du-Hauron limited himself to mere experiment in the production of these kinds of lantern slides, without publicly exhibiting them.

Since my communication of this method at the *séance* of the French Society of Photography on the 4th of March, 1892, M. Lippmann has stated that he had for several years made analogous experiments; but that they had not been published nor publicly shown. It was in the course of the lecture given by me on February 7, 1892, that the first experiments of this kind took place; then they were again presented on the 4th of March at the French Society of Photography, and finally at the Photographic Club on the 8th of March following. The authentication of these dates is important, and it is fitting to establish it in a manner as precise as possible.

In America, these polychromatic lantern slides, based upon the same principle, have been made at Philadelphia by Mr. Ives, who has occupied himself with them for some years, and in England by Mr. Scott. The work of Mr. Scott on this subject is not so well known as that of Mr. Ives, whose method has been published. In reading attentively all that has been published on this subject, I arrive at the conclusion that what may specially be attributed to Mr. Ives is the design of the apparatus of which he makes use. As to the effects due to the mixture of divers radiations of colors by the combination of diapositives obtained under certain conditions, they were foreseen and indicated so far back as 1869 by Messrs. Cros and Ducos-du-Hauron, and cannot be claimed by Mr. Ives, neither can the employment of orthochromatic plates necessary to the selection of colors, or the making of negatives proper to this application. That which is to be credited to him is that he has been an able applier of these ideas, and that he was the first to seek out the realization of the principles and processes published by others.

He must also be credited with having spread the knowledge of this very interesting application, and to have sought out and found the apparatus capable of most perfectly demonstrating the method employed. I have no desire to take away from him this part of the merit, and it is to be hoped that he will content himself with it, since all other pretensions would be assailable. For my part, I only seek to make known a method which is, I believe, calculated to render great service to arts and science. No more than my predecessor in this path have I the right, and I do not make any pretension, to be considered the inventor of one of these utilized processes; it is only that I seek, as Mr. Ives has done, a method of producing the same results, which appears to me more sure, more rapid, and more convenient.

An invention which is not realized is a sort of negation. It requires one or more practical men to introduce it into the domain of useful fact. For this reason, it is only just to recognize the persevering efforts that Mr. Ives has made to make known the employment of polychromatic lantern slides. I, too, may, perhaps, claim that I have rendered some service on my part by undertaking researches and publications in this same direction.

This preamble seemed necessary, in order that the distribution of the different *rôles* might be as exact as possible; it now remains to enter into the description of the facts, and this shall be done as briefly as possible. To verify the process of the synthesis of colors, indicated by Cros and Ducos-du-Hauron in 1869, I have counted upon the perfection to which recently the preparation of orthochromatic plates has been brought, and it is since I have become aware of this fact that I have been able, by the aid of certain preparations, to make a satisfactory trial of the colors, and that I have felt myself competent to make some attempts in the production of polychromatic lantern slides.

The point is, to work first of all in such a way that three negatives may collectively represent the whole of the divers radiations of a polychromatic subject.

After many attempts, I was able to arrive at a method of working which seemed to me, if not quite perfect, at any rate sufficiently so, to encourage me to proceed farther in the same direction, and to verify the facts predicted by the two before-named experimenters. And, in fact, after an interview with M. Molteni, who was good enough to place a triple lantern at my disposal, I was able, on the

7th of February, 1892, to show to a numerous audience, who filled the Grand Amphitheatre of the National Conservatoire of Arts and Manufactures, the marvellous effect produced by the projection of a bouquet of flowers with all its colors. Subsequently, numerous subjects of all kinds—pictures, photographs of views, and landscapes, &c.—afforded a demonstration full of promise.

The entire work comprehends the following diverse operations :—

1. Production of negatives.
2. Printing diapositives from those negatives.
3. The projection of their combined images by means of a triple lantern through screens of divers colors.

The number of three distinct negatives appears sufficient. On this subject, there may be differences of opinion, and the necessity for a fourth negative may possibly be demonstrated ; but there is reason to believe to the contrary, and it is to be hoped that this possibility will be real, in view of the greater amount of work the use of a fourth factor would entail, as there is already quite enough to do with three.

As each of these three negatives has its own analytical value, which should belong to it in view of the result to be attained, it is necessary that these three should well represent the whole of the fundamental color sensations —violet-blue, green, and red-orange—which, by their combinations, can produce every variety of color.

Every process conducing to a good selection of this sort, whether it is obtained on a single sensitive plate, or on several distinct plates endowed with different properties, may be considered good, and one must guard against formulating anything in this respect as absolute.

In my first trials three sorts of plates were employed—one, an ordinary plate ; another, an orthochromatic plate, sensitive to yellow and green ; and finally, one sensitive to red and yellow.

The interposed colored medium placed in front of each plate were in the same order—violet, red, and red-orange.

The duration of exposure varied, naturally, with the color of the interposed screen. Thus, in taking the second as a unit of time, it was for one second for the ordinary plate ; for three seconds for the plate sensitive to yellow ; and for three minutes for the plate sensitive to red.

These figures are only relative. It is evident that if the first exposure is only 1-50th of a second, the second would be 3-50ths, and the third 180-50ths, or about three seconds. With the other colored screens, these exposures would be modified. The duration of the operation excludes, for the time being, instantaneous plates ; but it is possible that we may arrive at making use of them by the help of some improvements, and in this case I would work in the same manner as Mr. Marey does—with his photochronographic apparatus ; but with less difficulties, since the total number of the successive proofs to be obtained in a certain fraction of a second would be reduced to three.

The negatives having been obtained, we must print from them diapositives, either by contact or by means of the camera.

The choice of the colored screens naturally requires a certain care. The essential condition of the choice is that the projection on the screen of the three colored discs should mingle thereon and form *white*. On the other hand, it is necessary that the three chosen colors should approximate as nearly as possible to the equivalent zones of the solar spectrum. The blue ought to have a tendency to violet ; green ought to resemble as nearly as possible the blue-green of the spectrum ; and finally, the red ought to approach as nearly as possible the yellow-red of the spectrum.

The projecting apparatus ought to have three lenses and three carriers, which can be independent one of the other, and they should be disposed in such a manner that registration can be effected on the screen in the best and most rapid manner possible ; an arrangement which would allow of simultaneous registration, followed by the introduction in the lanterns of the frame-carrier of the diapositives would evidently be best. It seems that this may be attainable because it is merely a question of construction, and our manufacturers execute work quite as difficult and complicated.

As to the lighting, it may be triple, each body of the lantern having its own jet, which permits one to regulate at will the intensity of each, in accordance with the effect wished ; or it may be a single one, in which case I regulate the intensity according to each object by means of diaphragms with variable openings.

To give as complete an idea as possible of the results obtained from this method of projection, many objects of quite a different nature were successively projected, and the audience was able to remark the richness and the infinite variety of the colors of the pictures shown.

It was not necessary to enter into long explanations in the presence of an audience sufficiently enlightened and competent to be able to appreciate the matter.

In a word, you can copy any colored object, show, and describe it to an audience. The result is, the *ensemble* of the three dispositives, an analytical deposit, in fact, of the real colors, by means of which, by a simple process of synthesis, we can reconstitute at will the original colors, in the same way in which the phonograph can reproduce sounds which have been confided to it.

It will be seen that these applications have a future before them. We need not, therefore, be surprised at the great attention they receive whenever shown to a public which can appreciate progress.—*The Photographic News.*

Notes and News.

A Slight Misunderstanding.—"I'll make you a half-tone photograph—"

"I'm a member of the 400 and you must understand that I want a high-toned photograph or nothing !"

We have received from J. Edw. Line, of Rochester, N. Y., a very pretty child picture, cabinet size. It appears to have been made in an ordinary room by a side light. The light effect is very good, and the picture as a whole, is very pleasing.

Cleveland was Elected, but a photographer stood third in the race in New York, being ahead of the Prohibition candidate, Bidwell, and the People's Party candidate, Weaver. Simon Wing, the Socialist candidate, received 5,129 votes in New York, while the Prohibition candidate received only 1,985, and the People's Party 2,025. Photography seems to be gaining on prohibition and the farmers.

Photographic Societies.

THE PHOTOGRAPHIC SOCIETY OF JAPAN.

A REGULAR MEETING of the above society was held on Friday, October 7th, at the rooms of the Geographical Society, Nishikonyacho, Kyobashi, Tokyo, Mr. Edmond R. Holmes in the chair. The minutes of the last meeting were taken as read, as they corresponded with the report published in the *Japan Mail*. After that the following gentlemen were proposed, seconded, and unanimously elected: Messrs. H. Baehr, F. Grosser, J. Schedel, and R. Mitomo. A set of pamphlets entitled: "The principles of a photographic lens simply explained," by Messrs. R. and A. Beck, was distributed amongst the members, and a printing frame, of ingenious construction, by the same firm, was shown. This frame was of metal, except the back, and was of such construction that the whole of the print could be examined at once. A cordial letter was read from the Secretary of the Photo-Club, Orahais. The new "Concentric lens," of Messrs. Ross & Co., was shown by Mr. W. K. Burton, along with work done by it, and by other wide angle lenses of the same focal length. The new lens did not give absolute definition with the maximum aperture of *f*/16, but it gave exactly the same definition at the edge as at the centre of a fairly large sized plate. With an aperture of *f*/22 it gave absolute sharpness very nearly to the edge of a plate 22 by 12, the lens being 12 inches focus and a flat object at right angles to the axis of the lens being focused. In fact, the field was truly flat, and this was the first lens of which such a statement could be made. A "Universal" lens by the same firm was also shown. This was of the type of the "Rapid symmetrical," but was twice as rapid. It was an outcome of the new Jena optical glass. Mr. K. Ogawa, as well as Mr. Burton, spoke of its high qualities as a portrait lens. The Foreign Secretary had been asked to report on a sample of Mr. J. B. Obernetter's plates. He had found them very rapid, although not quite up to the rapidity of the most sensitive plates in the market in Japan, and of exceptionally good quality. A very ingenious portable metal tripod stand, each leg going into a small tin box less than 3 inches long, was presented to the society by Mr. R. Mitomo. A set of small prints on bromide paper were shown by Mr. K. Arito, and were much admired. After a vote of thanks to the chairman the meeting resolved itself into a *conversazione*.

Record of Photographic Patents.

485,393. Film-holders for Cameras. Gustave D. Milburn, Rochester, N. Y.

485,567. Coin-Controlled Stereoscope. John Ringen, St. Louis, Mo.

485,758. Clip for Use in Photographic Copying. Alois Delug, Munich, Germany.

TRADE MARK.

21,932. Photographic Card Mounts. A. M. Collins Manufacturing Company.

GREAT PROGRESS.

"JENKS is enthusiastic over his new camera. He went out into the woods yesterday to make some sketches.

"Did he make any progress?"

"Indeed he did, especially when a wild deer came within eye-reach of him!"

Queries and Answers.

372 D. LEWISTON.—(1) How large a portrait can be made with the Waterbury A lens? (2) How far has the bellows of the camera to be drawn out to do so? (3) How far has it to be drawn out to make a picture of the natural size of the object?

372 *Answer.*—(1) At 4 feet distance, a head of about an inch in length. (2) A little more than 6 inches. (3) About 12 to 13 inches.

373 M. P.—How large a portrait head can be made with the Triad camera?

373 *Answer.*—The Triad will reduce 1 foot to ⅞ of an inch, at a distance of 6 feet from the subject.

374 MISS A. M. E. asks the following questions: (1) What is kallitype paper and what is it sensitized with? (2) What are its particular virtues over other printing papers? (3) Is it a printing-out paper like the aristo, or must the print be developed? (4) What tones will result from the process?

374 *Answer.*—(1) Kallitype paper is sensitized with an organic ferric salt, mainly with ferric oxalate, and generally with any of its double salts. The paper is first prepared with the oxalate and afterwards with a dilute and acidified solution of silver. (2) Cheapness and rapidity of action. (3) It is a developable paper. The exposure required being about equal to that of platinum paper. (4) According to the composition of the developer, brown, sepia, or neutral tones.

375 L. B. & Co.—What sort of a lens do you recommend for the copying of maps, charts, or similar originals?

375 *Answer.*—A lens of the rapid class is most advantageous for this kind of work. We recommend the wide-angle copying aplanat, Series VI., of the Steinheil Company.

376 NEESENBECK.—When the crystals of protosulphate of iron begin to cover with a powdery, whitish substance, is the salt of the same strength as when clear and diaphanous, and can it be used for the preparing of ferrous oxalate developer?

376 *Answer.*—The forming of the white, powdery substance upon the crystals denotes deflorescence, or a volatilization of the water of crystalliation, hence an increase of strength of the salt. If sulphate of iron in that condition is taken in the prescribed quantity, the ferrous oxalate solution will probably not be clear but muddy.

377 L. E. G. has tried to make collodion aristo paper. When dry, nitrate of silver crystallizes from the film. What is wrong?

377 *Answer.*—Too much silver in proportion to the alkaline chloride. For information on the subject we refer you to Mr. Ackland's tables, page 292, "American Annual of Photography" for 1892.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

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W I. LINCOLN ADAMS, Editor.

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We offer the following stock of Eastman's Bromide Paper at the appended special prices for the next thirty days only, to reduce our stock preparatory to inventory:

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64 "	5 x 8	" " " "		45
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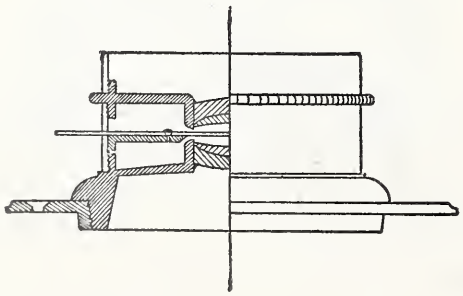
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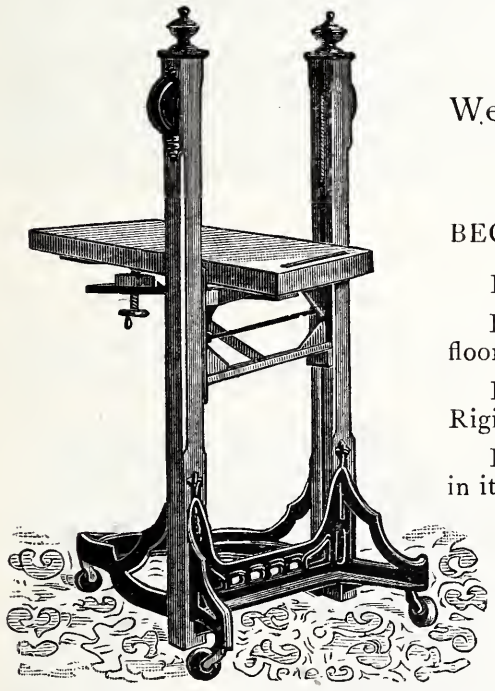
Hermagis, Berthist and Goerz Lenzes.
Green's Time and Inst. Shutters.
White's Posing Apparatus.
Globe Burnishers.
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Cameras for Field, Gallery and Hand.
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New England Agents for American Optical Co.'s Apparatus. Best in the world. Send for Price List. : : :

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We claim that The Semi-Centennial Camera Stand

BECAUSE— **IS THE BEST.**

It is simple in construction and will not get out of order.

It will enable you to get your Camera within 13 inches of the floor, or as high as you wish from the floor.

It is fitted with turning casters, with rubber wheels. Strong, Rigid, Easy in Operation, and Ornamental in Appearance.

It is the invention of a practical photographer and is perfected in its details. WARRANTED PERFECT.

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HORGAN, ROBEY & CO., Sole Agents,
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ENLARGEMENTS IN

Black, Sepia and Water Colors,

HAVE A DISTINCTIVE CHARACTER OF THEIR OWN.

Salient points of our Water Colors are faithful retention of likeness, delicacy of coloring and brilliancy of tone.

2637 STATE STREET, Chicago.

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ESTABLISHED 1865.

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WILSON-HOOD-CHEYNEY COMP'Y,
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Photographic Supplies,

AND THE

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Full Assortment of White's Posing and Lighting Specialties.

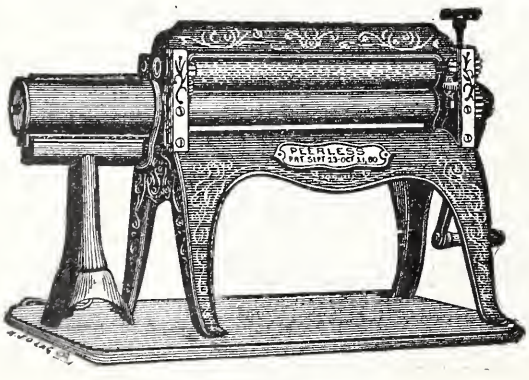
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A. M. Collins
Manufacturing Company

would call attention to Dealers in Photographic Supplies to their superior facilities for the manufacture and distribution of Photographic Cards, claiming that they have always in stock, or are prepared to make promptly to order, a greater variety and much larger quantity of Cards of superior quality than any other establishment in this or, perhaps, any other country.

Warehouse, No. 527 Arch Street,
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NEW "PEERLESS" BURNISHER.



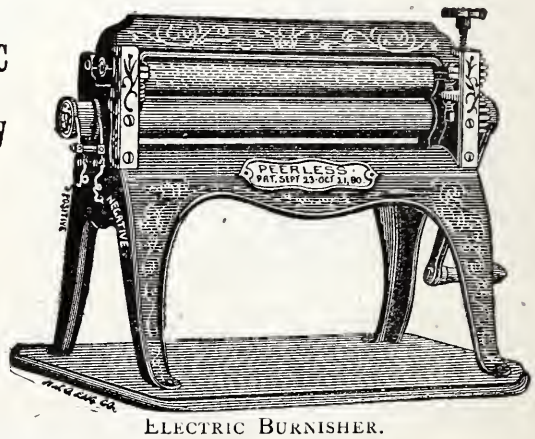
Oleum Burnisher.

OLEUM and ELECTRIC

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HEATED BY
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25 POINTS OF SUPERIORITY.



Electric Burnisher.

QUICKEST AND MOST UNIFORM HEAT OBTAINED.

These machines are the latest inventions of our Mr. W. H. Boles, the inventor of the well-known Acme Burnisher.

For Aristo Paper our machines cannot be equalled.

Don't buy until you have examined the **merits** of the **Peerless.**

ASK YOUR DEALER FOR IT.

Send for Illustrated and Descriptive Circular and Price List.

THE PEERLESS BURNISHER CO.,
Syracuse, N. Y., U. S. A.

IT IS "THE BEST!"



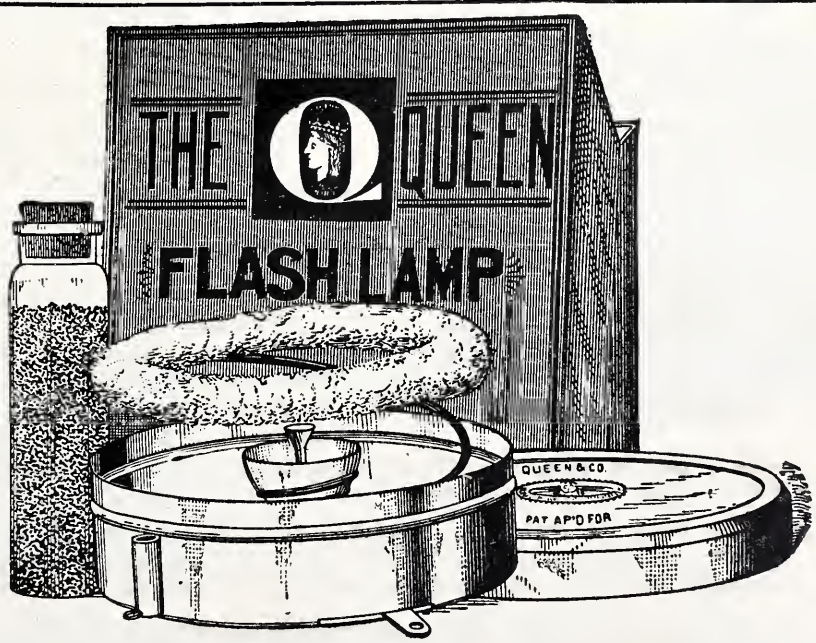
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THE SCOVILL & ADAMS COMPANY.

QUEEN'S FLASH LAMPS

THE ONLY ENTIRELY SATISFACTORY FLASH LIGHT APPARATUS IN EXISTENCE.

Mailed to any address upon receipt of $1.50.



$1.50

STATISTICS:

Depth 1¼ inches
Diameter 4 "
Weight 4 ounces.

Charge (small) 20 Gr., (costs about 1½ cents.)
" (large) 30 Gr., " 2 "

Size of room effectively lit when good lenses are used, about 25 x 30 ft.
Size of room effectively lit when cheap lenses are used, about 16 x 20 ft.

Time consumed in getting the lamp ready for discharge, 1½ minutes.

Jas. W. Queen & Co., Phila

THE 5 x 7 HENRY CLAY
Stereoscopic Camera
FOR TRIPOD AND HAND USE.



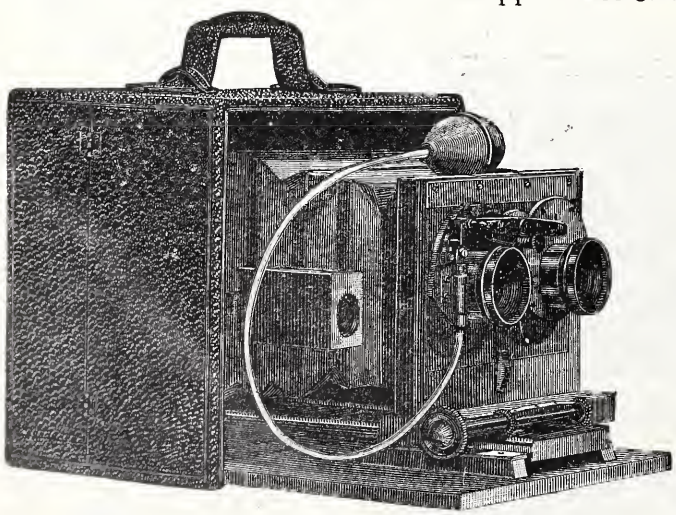
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide ; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release,** $75.00

This camera can also be made with vertical sliding and swing front. By means of the former the proportion of sky and foreground may be adjusted ; the latter permits the taking of subjects which may be either above or below the level of the camera and still preserve the lines vertical.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, and with vertical sliding and swing front,** . $80.00

A 5x7 Roll Holder for Transparent Films can be furnished with either of the above forms of this camera for $15.00 additional. This addition would make the case about two inches wider and one-quarter inch higher.

THE SCOVILL & ADAMS CO., 423 Broome Street, New York.



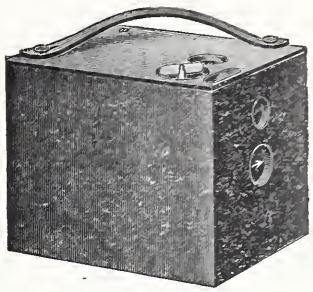
A Perfectly made, film-roll camera, making 3¼ in. round or square pictures, for $7 [ebonite] or $8 [leather].

No Dark-room required to load or unload. Uses "LIGHT-PROOF FILM CARTRIDGES" which can be inserted and removed anywhere. Each cartridge makes 12 exposures.

Beautiful Results. Simplicity of operation and GOOD FILM insure satisfactory results to the inexperienced, while the fine quality of the negatives astonishes old photographers.

Everybody should have one. No matter if you have a dozen other cameras The Bulls-Eye is the latest wonder and just the thing for *Lantern Slides*, or to slip in your grip-sack when travelling.

BOSTON CAMERA M'F'G CO.,
380 Tremont St., BOSTON, MASS.
FOR SALE BY THE TRADE.


Size, 5¼ x 4¼ x 4½ inches.


"LIGHT-PROOF" FILM CARTRIDGE.

Edwards's Special Transparency Plates.

For LANTERN SLIDES, Window Transparencies, and Reproductions in Black-and-White.

These Plates make the most perfect Lantern Slides, either by contact printing by artificial light or by means of the camera from larger or smaller negatives and give, at will, either engraving black or rich warm purple tones; they are also specially suitable for reproductions of line subjects for photo-lithography, when used for this purpose with our improved Pyro Transparency Developer, they give any desired density with perfectly bare glass in the high lights.

Price, 3¼x3¼ (English Lantern Size), 75 cts. per doz.

Edwards's Special Pyro Transparency Developer.

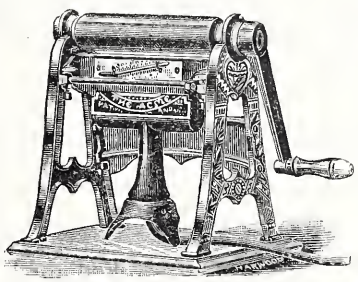
For Lantern Slides and Transparencies.

By means of this new Developer the most perfect Transparencies can be obtained on suitable Dry Plates with the greatest facility. It is the only Developer yet discovered which will produce (on Rapid Gelatine Plates) Lantern Slides of the highest class with RICH WARM TONES and perfectly clear glass in the highest lights.

Price, Two 8-oz. Bottles in Case, $1.50.

B. J. EDWARDS & CO., Manufacturers.

For Sale by THE SCOVILL & ADAMS CO.


PATENT APPLIED FOR.

Acme Amateur Rotary Burnisher.

NOTE.

Quickest Heater in the world.
Saves seventy-five per cent. of gas, oil or alcohol.
No sweat, no smoke, no smell.
Acme Horizontal Thermometer attached.
No blistered prints, uniform results.
Will burnish an 8 x 10 and all sizes under.
Simplest Rotary Burnisher ever made.
One-hand wheel adjustment.
Full Nickel Finish.
Guaranteed in every particular.

PRICE, OIL, GAS, OR ALCOHOL, $15.00.

FOR SALE BY ALL DEALERS.

MANUFACTURED BY
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REGISTERING SLIDES.

(PATENTED.)

In the pleasure or excitement attendant upon picture-taking, holders slides have been so changed about that the note-book afforded no clue to their identity. All photographers, whether professional or amateur, who have in time past puzzled their brains in the endeavor to solve such vexatious questions as these—

"Have I or have I not exposed that plate?"
"If exposed, was the plate used for that prized picture?"
"Shall I incur the risk of making a double exposure?"

henceforth will have themselves only to find fault with if they do not procure and use in their dry-plate holders the patent registering slides, or as they have been called "Record Slides." These can be written upon with slate or lead pencil *ad libitum*, and the writing erased without injury to them.

Registering Slides *will be supplied with new American Optical Co.'s Dry Plate Cameras and Amateur Outfits up to* 10x12 *size without addition to price list.*

JAMES SWIFT & SON'S

(LONDON, ENGLAND)

PARAGON LENSES.

We take great pleasure in announcing to American Photographers that henceforth we shall be enabled to supply them with JAMES SWIFT & SON'S PARAGON LENSES.

The reputation of these Lenses abroad is superior to that of any other make. They have been selected by the following named institutions because of their unequaled qualities and excellence.

The Scientific Department of the English Government in England, Calcutta and Bengal.

The Universities of Oxford and Cambridge, King's College and Edinburgh University College Schools.

Owens College, Manchester, besides the Governments of France, Germany and Italy.

The SWIFT LENSES have been awarded no less than seven gold medals, besides numerous diplomas of honor.

They are manufactured from the new ABBE-SCHOTT glass, which is undoubtedly more uniform in quality and specific gravity than the best optical flint and crown glass heretofore made ; hence the lenses are of a uniformly superior quality.

The Rapid and Portable Paragon Lenses

Are supplied with Iris Diaphragms and mounted in brass as well as aluminum; while the WIDE-ANGLE PARAGON LENSES are fitted Revolving Diaphragms.

THE SCOVILL & ADAMS CO.,

SOLE AGENTS IN AMERICA,

423 BROOME STREET, NEW YORK.

Catalogues of SWIFT LENSES supplied free on application.

An Indication of Superiority.

The great superiority of **BLAIR'S FILM** is conceded by all who have tried it, and we presume it is due to this that other manufacturers have enlarged the size of their spools so that the hollow tubes on which Blair's Films are wound will not fit over them.

As a corresponding change in our tubes would doubtless result in another change in the spools referred to, we will only say that we do not believe the public can be forced to use any goods against its will, and suggest that the seeming difficulty may be overcome by securing an old empty spool which can be obtained from any dealer, or turning down a new one.

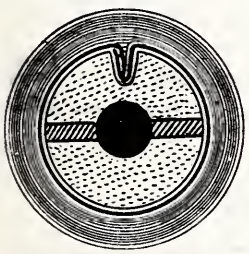
BLAIR'S FILMS are actually CLEAN, QUICK and RELIABLE, have no joints or seams, will never frill, and give uniformly good results. *CAN THIS BE SAID OF OTHERS?*

THE BLAIR CAMERA CO., Manufacturers,

BOSTON, NEW YORK. PHILADELPHIA. CHICAGO.

E. & H. T. ANTHONY & CO., Trade Agents,

NEW YORK CITY.



Our tubes are all ¾ inch inside diameter, and designed to slip over wood spools as shown in illustration.

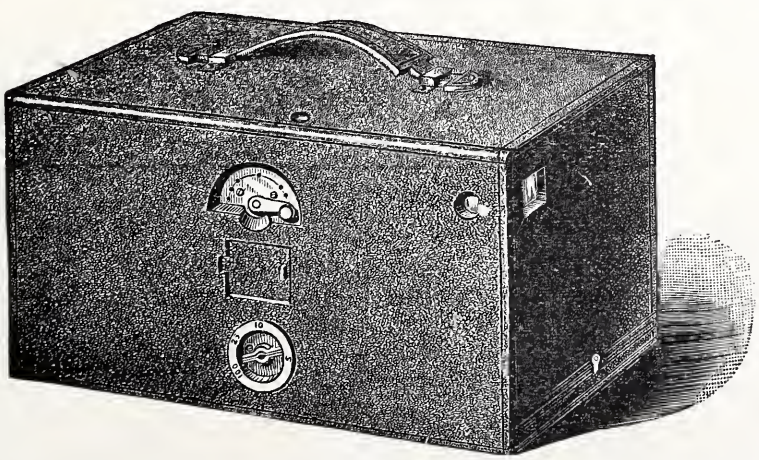
The Bristol

A NEW MAGAZINE CAMERA,

CARRYING TWENTY-FOUR 3¼ x 4¼ FILMS.

(Just the thing for LANTERN SLIDES.)

The Handiest Simplest Most Effective



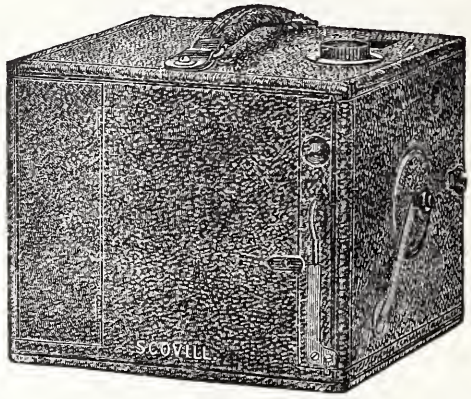
Hand Camera Yet Introduced

VERY COMPACT AND EASY TO WORK.——AN EXCELLENT LENS.

Send for a copy of "THE BRISTOL" Manual, which is fully illustrated, and perfectly describes this unique Camera.

THE SCOVILL & ADAMS COMPANY, Manufacturers.

THE WATERBURY DETECTIVE CAMERAS.



MANUFACTURED BY THE AMERICAN OPTICAL CO.

Timed and Instantaneous Photographs. This is the only Detective Camera which is as well adapted for making timed views as for photographing quickly moving objects. The negatives produced are of such sharpness that they may be enlarged to almost any size, It is

The only Detective Camera made for plate for tripod, and with ground-glass the full size of the plate, just as in an ordinary view camera. This ground-glass is where it cannot easily be broken.

The Recessed Finder shows *the same image* as is included on the ground-glass, though diminished in size. Without this accurate finder, one cannot be sure of what is taken in or left out of an instantaneous photograph.

The Focusing Scale is beside the Finder, where it may be readily seen and adjusted.

Price List.

	Leather Covered.
4 x 5 Waterbury Detective Camera, with 2 Double Holders	$25 00
5 x 7 Waterbury Detective Camera, with 2 Double Holders	40 00

FOR SALE BY ALL DEALERS.

The proper thing

In Photographs is the **ARISTOTYPE**

The proper thing

For making Aristotypes is the

ALPHA ARISTOTYPE PAPER

Send **30** cents for a sample dozen.
$1.70 per gross Cabinet size.

The proper thing

To protect Aristotype Prints are the

CABINET PHOTO COVERS

$2.00 per thousand.

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PHOTO SUPPLIES OF ALL KINDS,

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"NON-COCKLE"

FOR MOUNTING PRINTS.

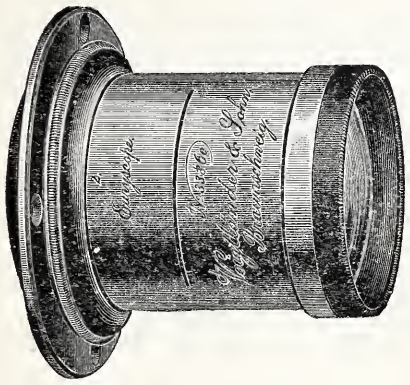


40 Cents per Bottle.

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Please remember that in speed and every desirable optical quality no lenses yet constructed can rival

Voigtländer's Euryscope Lenses,

which are made in SEVEN different styles.

BENJ. FRENCH & CO.,

319 Washington St. BOSTON, MASS.

Revised price-List sent on application.

Correspondence solicited.

"THE CHIP IS STILL ON OUR SHOULDER."

The **Triplex Shutter,** *although exactly the same as when introduced over three years ago, more than holds its own against all newcomers; and its old competitors many times improved.*

None can! None dare! stand before it in a competition, such as the one in which, in 1886, a **Prosch Shutter** *was declared* **the best Shutter in the market.**

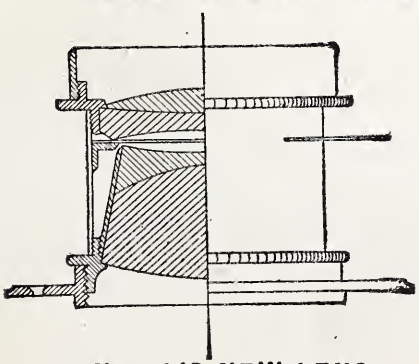
Prosch Shutters. Prosch Storage Flash Lamps.

Send for Circulars and information.

PROSCH M'F'G CO.,

389 BROOME ST., NEW YORK.

THE UNRIVALED STEINHEIL LENSES.



STEINHEIL'S NEW LENS.

These Lenses not only maintain their old-established reputation, but continue to lead in the field of progress. Made in six different series for every description of work. Special attention is called to

Series No. II, Patent Antiplanatic, the newest conception in rapid lenses. For Instantaneous Portraits, Large Heads, Full Figure Groups, Architecture, and Landscape. A marvel of illumination, depth and rapidity. No Photographer or Amateur should purchase a lens before testing a Steinheil, Series No. II. See accompanying cut.

Series No. III, the famous Aplanatic tube, the illumination of which has been increased, and which is recommended for large Portraits, full-size Figures, Groups, Architecture, and Landscape.

Series No. VI, Wide Angle Aplanat, which has no rival for copying Maps, Charts, Paintings and Engravings. It is the Photo-lithographer's favorite.

Send for Illustrated Catalogue and Price-List to

THE SCOVILL & ADAMS COMPANY.

What is the Latest in Photography?

HAVE YOU SEEN IT?

IF NOT, IT IS



A MAT-SURFACE PAPER, having no gelatine used whatever. Prints in the sun until the deep shadows appear; then is developed, washed and fixed. The prints have much the same appearance of platinum, and the tone can be regulated from a brown to black.

Full instructions come with each package, and from the ease in which it is worked, prints can be made by the amateur or professional alike without previous instruction.

Paper does not deteriorate with age. Solution put up in 10-ounce and 16-ounce bottles for immediate use, at 30 and 50 cents per bottle.

Parties trying "Vici" will be favorably surprised, as it is something entirely new, and should not be likened to the mat papers at present on the market.

THE C. E. HOPKINS CO,

Manufacturers of Photographic Sensitized Papers,

16-24 Division Street, Brooklyn.

CONSUMERS OF



In ordering our paper from Dealers and Photographic Stock Houses, are advised to order by the name of **OMEGA,** not Aristo or Aristotype, as other brands are then frequently substituted.

There are other papers now manufactured which are claimed by interested parties to be the same or like our paper.

This may apply to Gelatine Papers in general, but we claim for our product characteristics which no other paper possesses, and we advise all to specify **OMEGA** and accept no substitution.

NOTE. { Our reduction in Prices.
{ Our Paper now gives white high lights and will not yellow in Toning.

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KALLITYPE.—A new process recently discovered, yielding prints of a beautiful black tone with a mat surface

PERMANENT, RAPID, SIMPLE, CHEAP.

Send for price-list and toning directions.

TRY ALSO CULLEN'S NEW MAT SURFACE PAPER.
CULLEN'S OBERNETTER PAPER.
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CULLEN'S PLAIN SILVER PAPER.
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SUPPLIES AND APPARATUS OF EVERY DESCRIPTION.
Sole Agent for Kallitype, New Mat Surface, Obernetter and Manhattan papers.

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NO. 137 WEST 23D STREET, N Y.

PHOTOGRAVURE.
PHOTOGELATINE.
HALF-TONE. . .

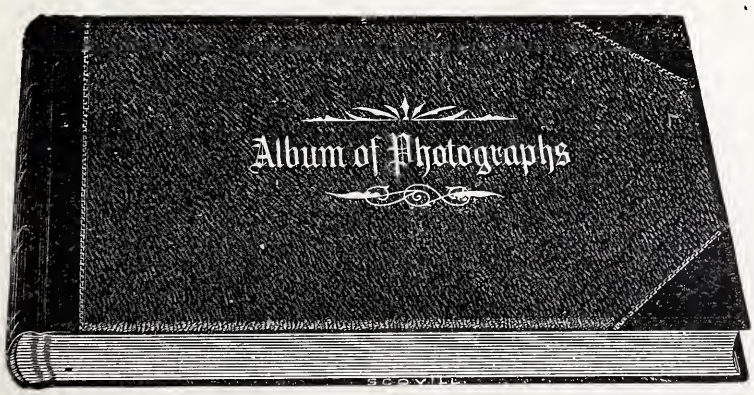
ERNEST EDWARDS, PRESIDENT. Inventor of the Heliotype Process. Manager, Heliotype Printing Co., Boston, from 1872 to 1886.

W. R. STANBERY, SECRETARY.

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Plain.....	$1.25	$1.50	$2.25	$2.50	$5.00
With Gilt Lines..	1.25				

Each album has 48 pages, 24 leaves. In them the finest card-board only is used, chemically free from anything that could injure a print.

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"Three Crown"

Albumen Paper

Is absolutely the BEST.

WHY?

Because none but the Best of the Rives Paper is selected for Albumenizing the THREE CROWN BRAND

It is therefore free from the imperfections often to be found in other brands, which arise from imperfections in the plain paper and cannot thus be avoided.

Look out for imitations of

WATERBURY CARDBOARD.



Look out for the genuine, too, and see that you get it.

It is the Best and Cheapest.

The Photographic Appetite increases by what it feeds on. The beginner is usually content to start with a modest outfit, but as interest grows the hunger for more artistic results calls for better facilities so that the apparatus must constantly be of a more improved pattern and contain all the latest fixings, till finally the question of improvement is entirely one of the value of the lens.

To suit this growing appetite we make a line of camera boxes unequalled for workmanship and convenient appliances. We can supply any stage of hunger and make to order to suit any whim. Any photographic question cheerfully answered. Send for our Catalogue.

The Rattler, $5.

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Stereoscopic, (Henry Clay) $75.

The Scovill & Adams Co.,

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Eastman's

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NOTHING SUCCEEDS LIKE SOLIO.

These Men Tried It.

They Succeeded.

See What They Say.

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Please send 10 gross Solio paper, cabinet size.

Yours truly,
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O. D. FAIRBANKS.

Varney's Studio, 3915 Cottage Grove Ave.,
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Rochester, N. Y.,

Gentlemen:—Kindly send me at once 24 gross Solio (4 x 6), and from now on, 12 gross per week. Duplicate my order for larger sizes and ship as early as possible. The paper is giving great satisfaction. Have made about 4,000 prints this week with beautiful results and scarcely any waste.

Respectfully,
G. W. VARNEY.

These are but fair samples of scores of testimonials which we receive from all over the country.

Send 10 cents for sample package and print, cabinet size.

Eastman Kodak Co.,
Rochester, N. Y.

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VOL. XXII. NOVEMBER 25, 1892. NO. 584

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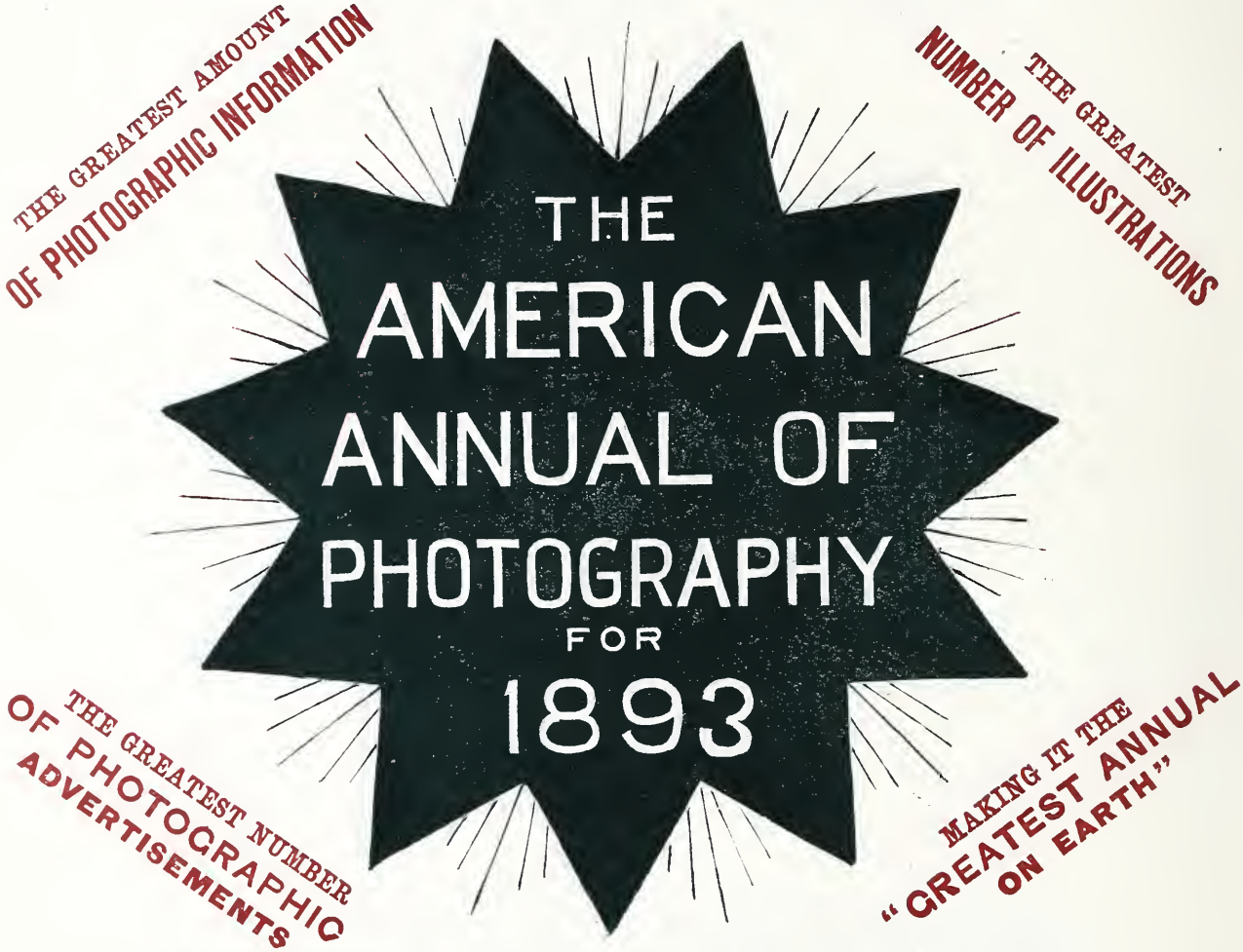
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NANCY HANKS.

THE PHOTOGRAPHIC TIMES.

VOL. XXII. NOVEMBER 25, 1892. NO. 584.

NANCY HANKS.

WE present our readers this week with an excellent photograph of the famous trotting mare, Nancy Hanks, which recently broke the trotting record by making a mile at Terre Haute, Indiana, in two minutes and four seconds. The negative was made by Mr. D. P. Cox, of Terre Haute, on a Cramer plate, with a Prosch Duplex shutter. Mr. Cox has made a specialty of animal pictures, and is one of the most successful photographers in this branch of work in the country. The present picture of this famous trotter testifies to his skill. We are sure our readers will be especially glad to have this excellent portrait of the horse who so recently broke the world's record in such a marvellous way.

COMPARISON OF DEVELOPERS.

NEW developers are continually coming forward, and it is continually said of the last, that it is quicker and better than anything before it. Discoveries are to be hoped for and honored, when made and found of real value, but a new thing for the sake of novelty is simply a nuisance and a complication. Since the days of the discovery and perfection of the gelatine dry-plate there has been a succession of candidates for honors, the developer as *par excellence*, which was to supersede all the others, and enthusiastic experimenters have always come forward with their testimonials of unquestionable superiority. I generally follow a long time behind the announcements, being more conservative as I grow old, but I do not fail to give the new comer an honest chance for the palm. Thus far I have not found any of the new devolopers qualified to succeed the old friend, pyrogallol. It is easy to make a trial, and it will often happen that the first trial gives results which for certain reasons are more satisfactory than those obtained in the old way; the new system, or the new material, is at once cried up to the skies as the great discovery, when the trouble may be that the old had never been properly used. Scientific experimenting demands a much greater exactitude and patience than the generality of photographers understand, unless they have had a chemical education. When you have been in the laboratory for a time and find how fine are the issues of failure or success in a simple experiment, you see that it is necessary to be precise in every step to prove a discovery. The way some amateurs of my acquaintance make a comparative trial is this: They go out in the country and expose a couple of plates on subjects which they want to keep, naturally they are not duplicates, and they may both be guess-shots. They go home and develop them with more or less precision, and the better negative is supposed to indicate that its method or material is the better. Anything in this vein is only mockery. It teaches nothing.

We will suppose that we have two developers to test by comparison. The proper method is to take a number of plates, say a dozen of a known and regular quality, put them in your holders, and, on a day of absolute, unbroken sunshine and near the noon-day, expose them in pairs as quickly as possible, giving each pair the same time, and graduating the exposures through the extreme limits of possible exposure with any result from certain under-exposure to certain over-exposure. I stop my lens down to the very smallest stop, so as to make the exposure as long as feasible that the chance of error in the timing may be diminished, using a stop-watch, prepare the rival developers in sufficient quantity, and lay two trays side by side in which you put each pair of plates and as quickly as may be pour on your developers. You will have two elements to determine the rapidity of development, and the range of intensity obtainable, and these are not always parallel. Push the development of the least-exposed pair to the extreme limit, and until they begin to fog, or till

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nothing more will come out, and you have the measure of the power of the developer. One of the two will probably have reached the limit before the other, and a careless experimenter would have said that it was the more powerful of the two, which may not be the case. This is the common cause of the mistake. One of the pairs of plates will probably prove nearly exact and give the most harmonious result in one or the other of the two. The over-exposed pair will give you the extent to which the developer you wish to test will be amenable to control in uncertain cases.

All this is a great trouble, but when you have gone through it you are certain of your fact, and without it or something like it you are not. The method of operation of one man will succeed with one developer and not with another, but this proves nothing. One will succeed with iron and not with pyro, and another is happiest with eikonogen; one is impatient and crowds his negative, and another goes slowly and patiently to work; all these differences have nothing to do with the merits of the materials. Tastes also differ as to what is wanted in a negative.

I have just been testing amidol, not, however, in the thorough way I have described, but in something approaching it, and thoroughly enough to say that I doubt its superseding pyrogallol for instantaneous work. I have not been able to bring out the detail in shadow as well with it as with pyro. I find, too, that it will fog, though it is said not to do so. Why it should not fog if pushed, I cannot divine, a power of fogging being inherent in developers. The few trials I have been able to give it do not convince me that it is superior to pyro, but I will not say that it is not, my impression is, however, that it has slightly less power and is much less manageable, and my friends in the club are of the opinion that it is not equal for the minimum exposures. As soon as the weather settles and we get some days of fixed sunlight I shall give it a thorough testing. No developer can be entirely satisfactory which does not give us the full power of at the same time controlling the development of the image and the density of the lights, in cases of widely varied and uncertain exposure, and in this nothing in my experience equals pyrogallol.

W. J. Stillman.

THE BISTIGMATIC LENS.

With illustration facing page 604.

THE capabilities of this new lens, the Bistigmatic, constructed by Rodenstock, of Munich, cannot be better described or elucidated than by presenting to your numerous readers a photograph made with it. To do so I have intentionally and deliberately discarded landscape subjects, and have in preference shown one of an entirely different character, for in the first place landscape photography is extensively cultivated for all illustrative purposes, and in the end a good landscape photograph may be made with almost any of the better constructed lenses, but mainly because the pictorial representation accompanying these remarks show evidence of the remarkably correct delineations of the instrument it is made with. The subject, a monument at the South Cemetery of Munich is moreover highly interesting, and one of the finest specimens of the many artistic sculptures there. It comes from the master hand of Prof. Zumbush, the figures being all correct portraits and the whole producing imposing effects.

The exposure was made with a Bistigmate No. 2, intended for plates of 13 x 18 c.m. Diameter of lens 34 m.m., focal length 21 c.m., and stop No. 3. Time of exposure three seconds before noon on an April day, the sky being well clouded. The price of the lens is but $4.20.

The principal faults occurring with most all of our objectives are caused by enormous absorption of light and reflections from the lens surfaces. With the bistigmates this is reduced to a minimum, for they are constructed of two symmetrical lenses of absolutely colorless glass, extremely thin and not cemented, hence their great rapidity of action and depth and brilliancy in the resulting photographs.

The tube holding these lenses is telescopically arranged in such a manner as to allow the displacement of lens into two different positions, one of them is marked "ground-glass," the other "exposure." It is extremely simple to work with the bistigmate. To obtain pictures of utmost perfection tube and lens are first put in position, "ground-glass" focus is taken as ordinarily, and the lens pushed into position. "Exposure," when exposed, is made as usual with application of desirable stop. It will be seen readily, the chemical and optical foci are not corrected in the bistigmatic lenses, and the correction is made by transposition after focus is taken.

Some sixty years ago and more, opticians were not able to compound glasses, to grind and combine them with the ultimate result of coincident foci, and the photographer of those days was compelled to displace the lens at random after the visual or optical focus had been found, always a very unsafe method to obtain sharp pictures. This procedure has been entirely obviated in the construction of the bistigmatic lenses; in practical

working no difficulty of that kind occurs with them. In calling the attention of the public to these very simple and interesting instruments, the writer of this expresses the hope to see them admitted to general practice.

E. Kiewning.

ON DEVELOPING PLATES IN VERTICAL POSITION.

(*Continued from page* 585 *and concluded.*)

In from five to ten minutes after the first examination the plates are looked at again, the image has been brought out, and it is indeed a pleasure to see the progress made. When development is completed the plates are removed, and others inserted. Those not yet done remain, but are turned occasionally either one-half or entirely.*

There is no more necessity to stop development of an abnormally exposed plate, to wash it and modify the solution, no more doubt of whether proper printing density has been attained. The new method is absolute certainty. Everything that can be brought out, according to the action of light and the relative sensitiveness of the plate, will be developed, and all that is needed to do is to wait patiently for the result. One difficulty to contend with is in different properties of different plates, which must be met by suitably modified developers. Like with the ordinary method of developing, all highly sensitive plates have a tendency to fog and is the appearance of fog prevented by additional sodium sulphite, the negatives will be but of feeble intensity. Plates thickly coated with emulsion of moderate sensitiveness are much preferred to the most rapid, of corresponding higher price, but of much less durability.

Plates inclined to frill are absolutely unfit for the process.

Development completed the plate is transferred to an acid alum bath, to avoid yellowing after fixing, and after washing in a certain kind of water, or they are at once fixed in the hypo-alum solution.

From four to six plates being subjected to the operation at the same time, there is actually not more time spent with this than with the ordinary method of developing. On account of form and shape of these vertical development vehicles, which can also be well used for rinsing, fixing and final washing of the plates, and it is indeed the only rational manner to do so, much space is economised in the laboratory. For plates of smaller dimensions, 4 x 5s, 5 x 8s, etc., such bath dishes† serve well to tourists, and may be profitably employed in all these operations.

The negatives produced are of an extremely fine grain and of a tone gradation impossible to attain by other methods, and with details in the lights that surely would entirely disappear by developing in the tray. Vertical development produces always good intensity, not absolute, but sufficient for easy printing. For bromide enlargements these negatives are especially well adapted, and reproduce broad and light portions of the picture with all possible gradations of light and shade.

The behavior of under-exposed plates having been left for a long time in the developer is remarkable. When subjected subsequently to an appropriately compounded intensifier, details will appear on portions of the plate previously quite glass clear and transparent Negatives of such character may not be pronounced as being perfect, but may be of incalculable value in scientific researches.

Over-exposed plates, removed from the bath at an early stage of the developing process, and because of the over-exposed shadow portions being not yet entirely covered, give the opportunity of a successful intensification. The danger of losing extreme detail by over-exposure is reduced to a minimum.

As previously stated, no other developing agent, in enormously dilute solution remains as active as pyrogallol. Even methol, the most convenient and safest of all novelties in developers must be prepared in the same concentration for vertical as for horizontal development, and as in either case the process is carried on uniformly and equally, the advantages of the vertical method are entirely lost.

A vulnerable point of pyrogallol, and so much objected to for this reason by amateurs is its property to stain fingers and hands is entirely abrogated, however, when the solution is so much diluted. An almost unlimited latitude is offered in the composition of the solution, to do justice to the character of plate and in correspondence with the time of exposure. When a wide angle lens stopped down to F/60 or F/80, thus exhausting the power of the instrument, the following developer is recommended:

100 parts sodium sulphite solution...	1 : 10
100 parts potassium carbonate solution	1 : 5
10000 parts (ten thousand)	water
2 parts.....	pyrogallol dry

For exposures with stop F/10 or F/15, instan-

* Our plates can be turned but in two directions. Dr. Meydenbauer's plates are square, some of them as large as a cubic meter.—*Translator.*

† May be had at Scovill & Adams Co.

taneous generally speaking, the solution is modified to

100 parts sodium sulphite solution... 1:10
100 parts potassium carbonate solution 1: 5
3000 parts (three thousand)..... water
1.5 part..... pyrogallol dry

Such enormously large masses of water are given merely not to be compelled to give pyro in very diminutive, almost inexpressibly small quantities. In the first formula the solid substances are proportioned to the water like 1:370, and in the second like 1:110. Should any composition be wanting effect, a modification, to be determined by a few experiments, may be easily made suitably, The two first-mentioned solutions are made separately and eventually mixed together. It keeps well in well-closed bottles. When making the developing solution, the prescribed quantities of the solutions (100 parts of each) are measured out in a graduate, and the glass well rinsed with water. of which there is an abundance.

The pyrogallal in perfectly dry state is ultimately thrown into the solution when a local brown coloration of the liquid takes place, but which disappears again by stirring. The complete solution is durable enough to keep well for two days at least, and after having been extensively used, can be reinforced by the addition of more pyro.

The solution is extraordinarily cheap, quite an important fact to some practitioners.

The advantageous action of this developer is an undisputable fact, but not yet subjected to exhaustive researches. The harmonious effects produced by vertical development with much diluted solutions are very striking, they have been ascribed to the slow process, but can possibly be traced back to the action of colored light rays. The values of brightness of green, blue and red, are much better reproduced with dilute pyro and by vertical development than by any other method, not excepting that with the same pyro solution and horizontal developing in a flat tray.

Whether or not researches have been made to show if optical action is promoted or retarded by different chemical influences, I am not prepared to say.

The success of the Photographic Department of the Photogrammetical Institute of Berlin depends evidently upon the method described above, and the much diluted solution of pyrogallal.

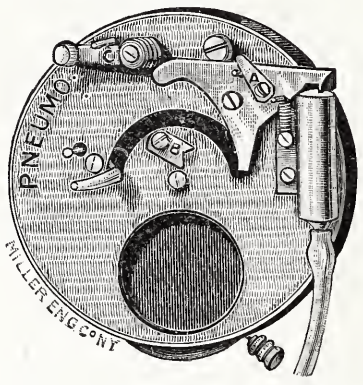
Dr. A. Meydenbauer.

A PUZZLE SOLVED.

"You cannot photograph a kiss."
Said lovely Ann Jemima Bacon.
And then he said, "I'm sure, dear miss,
I know just how one may be taken!"

THE PNEUMO SHUTTER.

THIS shutter is constructed on the simplest principles. It is the most compact and quickest, changed from time to instantaneous, and less liable to get out of order than any other. It is made of brass, highly polished, with working parts nickeled, therefore the handsomest in appearance, and has all the advantages of the highest-price shutter at less than half the cost. It is adjusted to lens by a velvet-lined collar, and in ordering it is only necessary to measure the lens hood with a strip of paper and forward to the manufacturer. This shutter is also adapted to go between lenses and is much smaller than those that go in front of lens.



Louis Prosch.

WHY ARE STEREOSCOPIC PRINTS TRANSPOSED?

[Reprinted with cuts by courtesy of the *Scientific American*.]

MR. EMIL KURTZ asks this question of the *Scientific American*. This problem, although very simple, is somewhat puzzling, The stereoscopic prints are transposed to bring them into the position the object occupies when seen with the eyes. The two pictures numbered 1 and 2 represent the view as seen with the two eyes, the one marked "L" showing the view as it appears to the left eye, and the one marked "R" showing the view as it appears to the right eye. Each tube of the stereoscopic camera inverts its own view; therefore, when these pictures are turned a half revolution in their own planes, as shown in the second engraving, they represent the image formed in the camera, and consequently the negative as seen from the glass side, also the print from the negative.

By placing this double picture right side up, it will be seen that the images have been transposed in the camera in being inverted, and, as the letters L and R now adjoin each other, the left-hand view appears in front of the right eye, while the right-hand view appears in front of the left eye, as shown in Fig. 2. It is, therefore, obvious that to place these two pictures in position to correctly represent the views as seen by the eyes, they must be cut apart and transposed, when they will appear as in the first engraving.

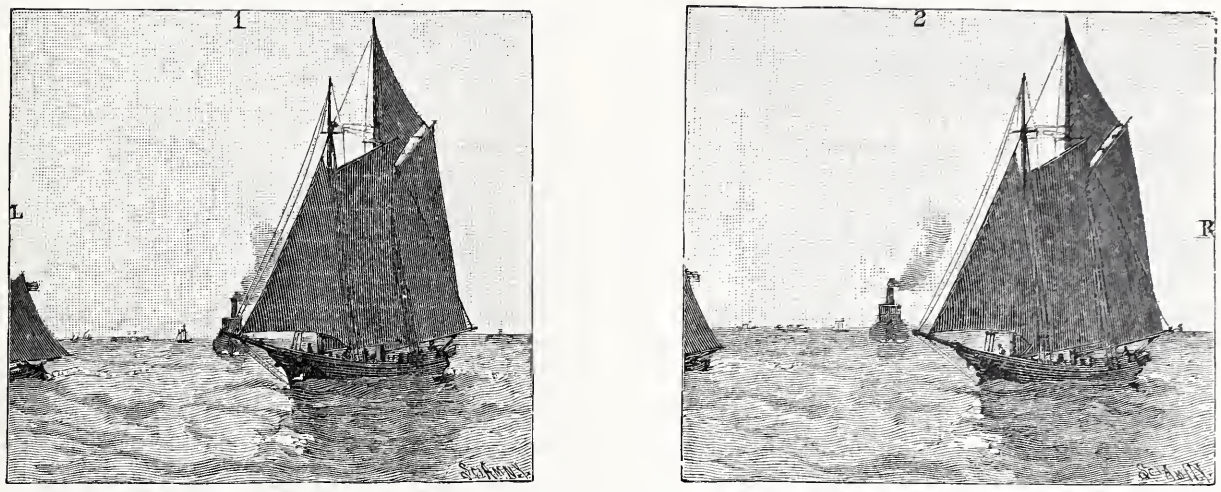


FIG. 1.—THE VIEW AS SEEN BY THE EYES.

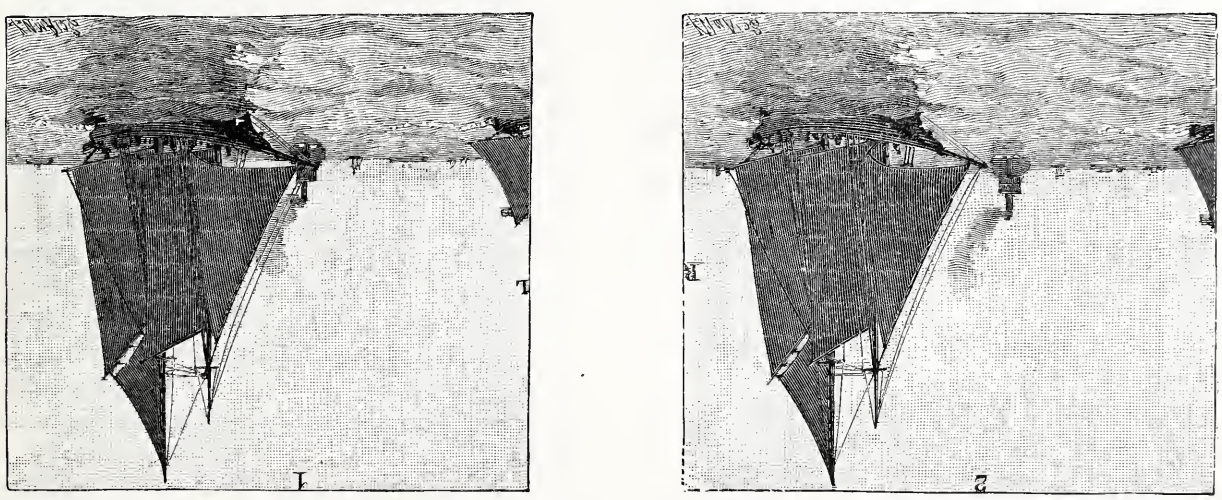


FIG. 2.—THE INVERTED IMAGES AS THEY APPEAR IN THE CAMERA AND NEGATIVE.

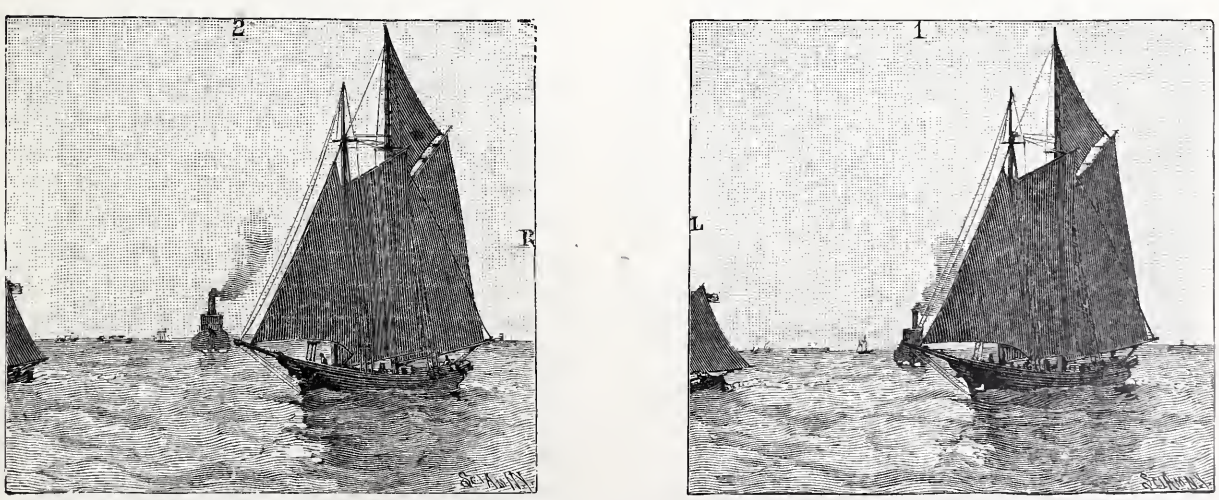


FIG. 3.—TRANSPOSED PRINTS.

DEVELOPMENT OF DRY-PLATES BY PARA-AMIDOPHENOL.

[Written for the "American Annual of Photography and Photographic Times Almanac for 1893," but received too late for publication in that volume.]

WHEN the new developor, rodinal, was introduced it became at once very popular. It possessed advantages in the production of negatives for printing in "aristo" paper that was obtainable by no other enlarging agent, and consequently as as soon and as fast as the facts became known the new developer was accepted as the leading article for that purpose.

I, among the others, became quite infatuated with it, and for a few months used it exclusively, but at the end of that time I had arrived at the conclusion that rodinal was a rather expensive agent, and also excessively slow in operation except during the heated term, and also that my negatives generally exhibited a lack of vigorous strength, which necessitated special treatment of albumen paper to produce healthy prints.

Consequently, I began to cast about for a modification or change that would retain to good qualities of rodinal with greater contrast and more facility and action.

The conclusion I have arrived at I offer to the photographic patient as my contribution to "The Annual" this year.

I take two 64-ounce bottles, fill each with water and add to one

Sulphide soda	.3	ounces
Granulated sugar	.3	ounces
Pulverized quicklime	.1	ounce
Hydroquinone	½	ounce

To the other bottle I give

Granulated sugar	3	ounces
Sulphide soda	3	ounces
Pulverized quicklime	3	ounce
Para-amidophenol	¼	ounce

Thus I have two 64-ounce bottles filled and ready for use in equal proportions, thus 2 ounces fluid of each solution will develop several 5 x 7 plates in succession to a beautiful quality of richness of detail and vigorous strength, and of a color that just lays over anything I have seen heretofore.

Thus I gain all the good qualities of rodinal and all the other desirable qualities that rodinal does not possess.

E. M. Estabrooke.

ATTACHED TO HIMSELF.

"HE's the most conceited, selfish bachelor I know."

"What makes you say so?"

"In that locket attached to his chain you'll find two miniature photographs of himself!"

CRYSTALLOS.

[Written for the "American Annual of Photography and Photographic Times Almanac" for 1893, but received too late for publication in that volume.]

Under this name an exceedingly rapid developer has been compounded and put upon the market by a house in Paris, and by myself here in Vienna.* Without saying too much of it, it is the most energetic developer known at present, the most active in the shortest time. The many alleged analyses by would-be chemists, according to which the compound is a mixture of alkaline eikonogen and of hydrochinon solution are without foundation. A true analysis has not yet been made of crystallos. at least none has ever been published, but for the benefit of my American colleagues, I will give my formula to THE PHOTOGRAPHIC TIMES:

Sulphite of sodium crystallized	8	ounces.
Ferro cyanide of potassium	2½	ounces.
Hydrochinon	1½	ounces.
Caustic potassa solution (75%)	2	ounces.
Distilled water	28	ounces.

The compound is best made by dissolving the first three substances in 20 ounces of water at a temperature of 140 degrees Fahr. then add the prescribed quantity of caustic potassa solution also of the same temperature, and finally the rest of the water, allow to cool and filter. The Parisian crystallos is of a red color. To give it a tint, add a trifle of any red aniline color, phloxine, magdala red or anything like it, but the addition has no effect whatever, and is done for commercial purposes, perhaps to distinguish one solution or preparation from another.

For very short exposures, dilute with 3 volumes of water, for longer or normal exposures with from 5 to 8, and if necessary use the usual restrainer of a 10 per cent. solution of potassium bromide.

As soon as the developer comes in contact with the plate the image appears, quite suddenly in most instances, and intensity builds up rapidly and uniformly. As soon as the plate margins, where light has not at all acted, become covered with a slight fog, interrupt the process.

Very long continued development, like, for example, with under-exposures, is apt to stain the gelatine film yellow, which may also occur when the developer is not thoroughly washed from the plate before fixing it.

The solution may be profitably employed over and over again, and under all circumstances, and is of greatest advantage in the development of instantaneously exposed plates. When used in highly concentrated form, and in consequence of the

*The same preparation is made and sold by The Scovill and Adams Co., in New York.

large amount of caustic potassa contained in the solution, it is apt to attack the film, and also the cuticles of hand and fingers to some extent, but these are the only disadvantages of crystallos.

Charles Scolik.

PHOTOMICROGRAMS WITH STEREOSCOPIC EFFECT.

[Written for the "American Annual of Photography and Photographic Times Almanac for 1893," but received too late for publication in that volume.]

STEREOSCOPIC photomicrograms have been hitherto made by two different methods. It has been done by suitably stopping down the objective in such a manner that by the first exposure made one-half of the lens becomes active, and by the second, the other. To accomplish this, older photomicrographists have inserted before the anterior lens of the objective a semi-circular diaphragm, rotating to 180 degrees of a circle. According to Fritsch* it is of advantage to attach the stops to the interior of the lens tube, and when the second exposure is to be made turn the lens itself to 180 degrees of the circle; and to facilitate semi-circular motion by interposing a disc enclosed within a threaded case, to screw it directly to the instrument.

The second method, most generally adopted in photomicrography, and adapted to make enlargements on more extensive scale, prescribes to incline the object towards the optical axis of the microscope. The apparatus to assist well in such inclining of the object is the so-called stereoscopic Wippe.†

Binocular microscopes, with which stereoscopic effects have been produced by interposing prisms in the path of the light rays is, on account of many difficulties occurring, but very rarely employed in photomicrography, as far as I know.

It has also been attempted to produce stereoscopic effect by moving the object from right to left, or from left to right, for bringing the image in the two opposite edges of the field of vision of the objective. It is a method based upon perfectly correct principles, as accordingly the object before the instrument is seen and respectively photographed at one time from the right side, and at the other from the left. It appears the method has not always given perfect satisfaction, possibly on account of unsuitably selected objectives, or because of the attempts to make the enlargements too excessive; but Dr. Carl Laker, a member of the Graz Amateur Photographer Association, has recently employed it with extraordinary success. He has photographed the minute auricular bones, rhinoliths, etc., by but limited enlargement, but with absolutely perfect stereoscopic effects. Members of his club, as well as men of science who are acquainted with the objects, and have seen these stereoscopic photomicrograms, speak in the highest terms of their marvellous and interesting results. With a single photograph the character of the object is *absolutely non-discernible; under the stereoscope it is seen with beautifully plastic effect.* The method is extremely simple, and deserves to be well recommended. Dr. Laker enlarged well up to from six to eight diameters, and does so with small aplanats or Zeiss objective of 25 m.m. focal length. He erects his camera in horizontal or vertical position, and uses plates of such dimensions as to cover half of them with the image projected. The object must at first be so placed that its image is projected upon the right end of the focusing screen for example, and after exposure has been made, be moved parallel with the long edge of the plate, and in exactly the same position, till the image falls upon the left end of the screen, when the second exposure is made upon a separate plate. On account of the small diaphragm used, re-focusing is not at all necessary.

The first exposure corresponds with what is seen by the left eye, and the second what is seen by the right, for which reason proper attention must be paid to reversing the photographic paper copies when mounting them.

To move the objects after first exposure has been made, in parallel position to itself, and to the long edge of the plate, it is recommended to fix it upon a wooden or metallic rectangular plate, travelling between guide rails, so that a regular moving of from two to three c.m. from right to left, or *vice versa*, can be easily effected. The supporter of guide rails and the plate carrying the object is to be placed before the objective in such a manner that the guide rails come in position, parallel with the long edge of the plate. A very convenient camera to make such photographs with, is that known by the name of physiograph.*

Proper illumination of the object to be photographed is of utmost importance, a plastic reproduction can only result from correct distribution of light and shade. Cardboards with circular apertures of from ten c.m. to four c.m. diameter erected before the object will regulate illumination; an

*G. Fritsch. Ueber das stereoscopische Sehen und die Herstellung stereoscopischer Microtypien auf photographischem Wege. Berlin, 1877, page 93.

†See page 185 of the author's Die Microphotographie als Hilfsmittel naturwissenschaft licher Forschung. Wilh. Knapp, Halle A/S, 1890.

*See page 70 of the author's above-mentioned book, and page 97, Vol. II. of G. Pizzighelli "Handbuch der Photographie." Wilh. Knapp, Halle, A/S.

overflow of light is prevented, as only as much of it becomes active as is permitted to pass through the diaphragm. Curved pieces of white cardboard in corresponding position with, and distant from the object, will serve well to light up the darker portions.

I hope confidently to be able to prove by experiments, intended to be made during the coming winter, whether the method can be applied to more extensive enlargements, and whether it will be admissable to move the object sufficiently to then obtain stereoscopic effect, and reserve to myself the pleasure of returning to the subject in the next volume of "The American Annual of Photography."

For limited enlargements, the method as above described can be well recommended.

Gottlieb Marktanner-Turneretscher.

RETOUCHING WITH THE INCANDESCENT LIGHT.

THE dark weather and Christmas busy times are on us, and poor-light nights and mornings, together with occasional days of leaden sky, force the retoucher to concentrate effort, and make hay while the sun shines.

The terrible havoc which overworked or abused eyes plays with the general health of men and women, is well known to physicians and occulists; and this abuse and overwork at this time of the year is not only frequent, but the rule. To a humanitarian the wicked waste of human life spent at the retouching desk is appalling and utterly inexcusable.

Fortunately the progress of invention has made ready to our hands an apparatus which mitigates this extra waste, and perhaps would prevent it altogether if universally used. I refer to the incandescent electric light. No retouching stand at this time of the year should be without it; the cost is insignificant for both apparatus and current, while the steady light which it gives, is a great relief to the wearied eyes struggling in vain to see with the aid of a mirror as reflector.

In my own practice I use a 25-candle-power lamp, and have a lot of slack wire so that I can place the light where I please; ordinarily it rests at one side of my retouching desk, ready to be moved at a moment's notice to its place, directly in front of the hole where I work, and about six inches away from it. A ground-glass stands close in front, and another half way between it and the negative, and the regular ground-glass of the stand makes three thicknesses of that commodity. Although there is a little glare, I don't find it annoying. The whole is adjusted in a minute, and there is no loss of time. This glare can be avoided by using a 32-candle power lamp, and placing it a little to one side, so that it is not directly in front; diffusing with a piece of ground-glass close to the globe, and surrounding on all sides by white reflectors gives an easy and agreeable light.

By interposing a plate flowed with collodion containing a little aniline violet, a good deal of the yellowness is avoided, and a soft, easy, slightly greenish colored light results, which is pleasanter to many than the yellow of all small artificial lights.

The superiority of the incandescent light lies in its comparative freedom from heat and consequent danger of fire; its ease of application, for the lamp takes up so little room that it need not be moved from the stand, but most of all, it is steady and constant, there being absolutely no flicker to weary the eyes, such as makes gas-light unbearable and kerosene lamps wearying. I have several times during the past two years worked all day with the light as described, and found myself little if any more tired than with daylight, and the work is of a more uniform character than is the case where negatives are retouched in a poor afternoon light, every negative retouched by the incandescent being fully up to the standard.

R. W. Harrison.

HOW PAPER IS SIZED.

THE gelatine used for sizing the better classes of writing papers is precisely the same as that so well known to culinary art, remarks Mr. Arnott in his dissertation on the paper-making industry as commonly carried on in Great Britain. It is the soluble portion of hides, bones, horns, and hoofs, and is extracted from these substances by warm, but not boiling, water, in copper steam-jacketed vessels. The raw material most largely used by the paper-maker for the preparation of animal size is what is known as "scrows," which are the pieces trimmed off the hides previous to tanning. These parings may be used fresh, but usually the source of supply is distant from the mills where they are consumed, and this renders it necessary to cure them so that putrefaction may be prevented.

The curing is effected by means of lime, and before the "scrows" are treated for the extraction of gelatine the adhering particles must be removed and the material itself softened by steeping in cold water. When the "scrows" are quite free from lime, and indeed restored very much to their original condition, they are put into the copper vessels and dissolved.

From five to seven per cent. only of the original weight remains in the form of slime when all the gelatine has been removed.

To effect the complete removal of the gelatine, two or three successive solutions have to be made, and these are

run together into tanks or vats, through strainers designed to keep back slimy and other impurities, which would impair the brightness or otherwise injure the character of the size.

The temperature at which "scrows" should be treated, so as to get the gelatine in its purest condition, varies according to the character of the "scrows" themselves, some varieties requiring a higher temperature than others. It may be taken as a general rule that the finer the material is, the lower the temperature that will suffice, and the product will be purer. Inferior "scrows" are more difficult to dissolve, requiring a higher temperature, and besides, they do not yield such a pure size. About 140° Fahr. should be sufficient for the finer sorts, and from that up to 180° for inferior qualities.

A very small percentage of gelatine dissolved in water will, on cooling, become solid, but a comparatively short exposure to atmospheric influences, especially in warm weather, will cause it to putrefy and become liquid. To prevent this occurring on the large scale, alum is added to the gelatine shortly after it has been discharged from the dissolving vessels. The immediate effect of the alum is to thicken the size; but the element of acidity is also introduced, as the alum has naturally an acid reaction, and this is no doubt prejudicial to the paper treated. To neutralize this acidity, as well as to improve the size, or facilitate its application to the paper, some paper-makers add white soap to their gelatine. The writer fails to see what good this does, further than neutralizing the acid alum, and indeed this neutralizing of the alum means more than is generally supposed, for the result of the admixture of the two substances involves the destruction of both.

The soda of the soap combines with the sulphuric acid of the sulphate of alumina, forming sulphate of soda, and precipitating the alumina. Of course, the oily or fatty matters which were combined with the soda to form soap are set free, and may have some beneficial, though undefined effect. It becomes a question of some interest, then, how the gelatine is really preserved from putrefaction, when soap is added in sufficient quantity to precipitate the whole of the alumina. It is quite clear that in that case the alum, as such, no longer exists, and it may be taken as established that neither the sulphate of potash originally associated with the sulphate of alumina in the alum, nor the sulphate of soda formed by the reaction, have any preservative influence. The question just comes to be—does the precipitated alumina or the liberated oils accomplish this object, or is there really no chemical preservative agent present at all? Of course, it is quite likely that the soap may not be added in proportion equivalent to the alum, and that some sulphate of alumina may be left to exercise a wholesome influence.

The size, on being required for use, is reduced with water and conveyed to the sizing tub, the intermediate arrangements being such as will insure the tub being kept uniformly full. On the tub, or trough, the length of which is co-equal with the width of the drying machine, there is a roller which takes the web of paper down through the size, so as to saturate it thoroughly. The surplus adhering size is removed from the paper by passing it between a pair of rollers, placed so that the excess will flow back into the tub.—*The Paper Mill.*

Notes and News.

Amidol.—Everybody is trying Dr. Andresen's latest developer, amidol. It is a powerful one-solution developer which requires no alkali, is very soluble in water, and gives excellent detail and density in the negative. It reduces the time of development to a great extent, being a most powerful and quick-acting agent. It promises to supersede all the other developers, as it produces a negative more like the old collodion wet plate than any of its predecessors.

A good formula for preparing the developer is as follows:

Amidol	80 grains
Neutral sulphite of soda (crystals)	800 grains
Pure water	8 ounces

Para-Amidophenol is by no means losing ground. The Scovill & Adams Co. reports increase of sales of this popular developer.

The Holiday Number.—The December 16th issue of THE PHOTOGRAPHIC TIMES will be the usual double holiday number. All readers of the magazine are invited to send in as contributions for this number the results of their practical experience. The MSS. should be in the hands of the editors not later than December 10th.

"The American Annual of Photography and Photographic Times Almanac for 1893," will be issued simultaneously in Great Britain, Australia and America, promptly on December 1st, as announced. The advanced orders for this book have already amounted to 14,000 copies.

Concerning THE PHOTOGRAPHIC TIMES formula for para-amidophenol developer, our good friend, Chas. Scolik, of Vienna, says: "It is an excellent developer, and never fails to produce desired results. It is far superior to rodinal, and other similar compounds."

Another proof of the popularity our associate, the veteran photographer, Professor Chas. Ehrmann, enjoys abroad is, that his portrait from an original negative by Miss Catherine W. Barnes reproduced by J. B. Obernetter, and first published in *Photographische Rundschau* appears now in *Deutsche Photographen Zeitung*, so ably edited by Karl Schwier.

Zeitung is the foremost photographic journal written in the German language, it is the official organ of the great German Photographers' Association, and several other societies. It is a weekly.

Mr. Frederick E. Ives, of Philadelphia, exhibited his Heliochromoscope before the New York Camera Club, Monday evening, November 21st.

John Carbutt, of Philadelphia, was in New York last week.

F. J. Haffner, of Denver, Colo., has sold his studio, and expects shortly to start for a trip to Mexico. After his return he will engage in half-tone work.

Messrs. Peters & Frazer, of The Norris Peters Co., of Washington, D. C., were in New York last week.

Mr. Wuestner, of the New Eagle Dry Plate Works, will shortly place upon the American market a non-halation plate that promises to supersede all others for interior work.

Mr. Richard Walzl, of Baltimore, called at THE PHOTOGRAPHIC TIMES office last Monday, November 14th.

The address by Col. V. M. Wilcox which was delivered before an appreciative audience in the Philipp's Presbyterian Church, N. Y. City, Friday evening, Nov. 11th, was a great success. The church was well filled, and the audience was an enthusiastic one.

David J. Howell, a prominent amateur of Toronto, Canada, called at THE PHOTOGRAPHIC TIMES office last Tuesday. He showed a silver medal which he had recently been awarded in the Canadian Exhibition, for work made with "The Knack" camera.

The S. P. C. Amidol Developer is "catching on." Its great power as a developing agent, the rapidity with which it develops, producing at the same time such fine qualities in the negative, and its convenience (being in one solution), is commending it to a large number of buyers.

Druggists' and Photographic Goods.—The *Chemist and Druggist* has been offering a number of valuable hints and suggestions regarding the expediency of druggists handling photographic supplies. We are glad to use some portions of these articles, slightly modified to conform to the requirements of the trade of this country.

It is now accepted on all hands that a large part of the business of retailing photographic materials should be in the hands of the druggist. In larger cities there are large emporiums where every kind of photographic apparatus and material may be purchased. The enormous advance in photography amongst amateurs makes it imperativethat the articles of everyday requirement such as chemicals, plates, and paper shall be obtainable near home. This growing popularity of photography as an art cultivated by amateurs makes it yearly more and more incumbent upon druggists to cater to photographers. The profits are considerable, and the wholesale houses will be only too glad to offer terms. It may not be wise for any but those with special opportunities to hold large stocks of apparatus, but it is to the benefit of the body generally that all should keep an assortment of chemicals required by photographers for making up developers, toning baths, etc. Developing agents—such as pyrogallic acid, hydroquinone, eikonogen, these may with advantage be made up ready for use or sold in a concentrated form, and, if properly pushed, will become a source of considerable revenue. In stocking dry plates, it is well not to attempt to keep all brands, but to select one or two well-known plates, and keep a small stock up to 10 x 8 size, and never allow the stock to run out. In printing paper it would be well to have packets at uniform prices, varying not the price but the number of sheets, as the Eastman Company do with their new gelatino-chloride paper, made up in sizes and packed in specially labelled light-tight envelopes. The special papers issued will find a ready sale as packed by them. The bromide paper of the Eastman Company and their gelatino-chloride paper are sure to go well. Then there is that excellently prepared paper supplied by the Platinotype Company, and their special developing solutions, for which there is a large call, quite a safe stock in small quantities. In apparatus a judicious selection of cheap goods, photographic kits (¼ to ½ plate size for beginners), hand cameras, tripods, cases, developing dishes, graduated glasses, scales, rockers, ruby mediums for covering up windows, photographic books and journals—all these are in every-day demand. A part of the shop windows may with advantage be set aside for showing goods; the wholesale houses will supply cards, specimen photographs, etc., which will help to brighten up the shows and a new branch will be added which has proved in many instances most important.

That it is worth while to meet local demands by keeping a fair stock of plates, papers and chemicals, is unquestioned. But no druggist must expect to make a very appreciable addition to his income by nibbling at the trade in this way. Like every other department, this one, if it is to be developed into something of real value, demands knowledge, judgment, and courage to invest—to speculate is perhaps the better term. In localities where there are a good many resident photographers, or which are often visited by tourists, the investment ought to be worth making. But it must be on a fairly large scale. A good varied stock which will tempt the modern amateur. It requires suitable space, and it wants to be managed by a man who is practically acquainted with both the art and the science of photography. Given the right man, and the right place, the investment ought to bring in some 20 per cent. at least.—*The Paramacentical Era.*

AMIDOL.

THIS new developing agent which at present claims the attention of European experts, offers more justification for the popular belief that pyrogallol will soon be superseded, than any of the coal-tar products. This fact can be directly ascribed to its great energy of development, extreme simplicity of working, and the beautiful color of the deposit.

My experiments have led me to believe that amidol gives truer value of light and shade, more perfect halftones, and better printing quality than any other developer, and that the prints from amidol-developed plates are a truer representation of the original subject, and consequently much more satisfactory. Delicate details and full density go hand-in-hand, and there is no forcing of detail at the sacrifice of density, and *vice versa*; in fact, amidol-developed plates render a softness and roundness coupled with a clearness of high-lights and shadows seldom found in plates, except where the subject, time of exposure, and other conditions have been exceedingly favorable.

Development with amidol is reduced to a mechanical basis, demanding but a sufficiency of judgment to enable the operator to tell when his plate has been sufficiently developed, and even this is much simplified by the mini-

mum loss of the plate during fixation, which is hardly noticeable.

The best results are probably obtained by developing with the following formula :

Amidol	80 grains
Sulph. soda (cr.)	360 grains
Water	40 ounces

Unlike similar substances, amidol is very easily soluble in water, and should be added after the sulphite is entirely dissolved. As in pyrogallol development, the addition of a small quantity of citric acid has a beneficial effect. The absence of an accelerator will be noticed; this is one of the peculiarities of amidol.

The process of development is very rapid, in fact takes place almost immediately following the immersion of the plate in the solution and goes on with the same rapidity, detail, and density, bursting into view simultaneously, and the development is completed in from three to four minutes.

Under-exposure is hardly noticeable in developing with amidol, as the only difference noticeable is the additional time required for the negative to fully develop, and the eventual result (if plates are not entirely too much under-exposed to offer any hopes of a picture being obtained) is almost equal to a correctly exposed plate. One thing I feel certain of, if any developing agent is especially advantageous for under-exposed plates, this developer is amidol. There being no carbonate in the solution, it stands to reason that the liability to chemical fog resulting from forced development is reduced to a minimum.

Amidol, like coal-tar agents generally, may be used repeatedly, but on discoloring should be discarded at once.

Over-exposure is regulated by the addition of potassium bromide (preferably a 10 per cent. solution) at the discretion of the operator, and care should be taken not to carry the development too far to avoid cast-iron negatives, as the plates lose very little in the fixing bath and print all you can see on the negative.

In conclusion I would offer the opinion, that amidol is bound to rank with pyro as the best photographic developing agent extant, even should future experiments prove that it will not supersede this long-time favorite of the professional photographer, and all who experiment with this new agent will have a novel and gratifying experience to relate.—G. C. GENNERT, *in Wilson's Photographic Magazine.*

The Reproduction of Photographs.—The *Engraver and Printer* recently stated: "half-tone engraving enables the reproduction of any photograph, though the degree of excellence, of course, of the original has its exact equivalent in the reproduction. In the general run of half-tone engravings, surprise is often expressed at the relative results obtained from different subjects. In general practice it is found that certain qualities of coloring and lighting are important considerations. Of the two silver papers used in ordinary photography, the prints on white paper yield much better results than those made on a pinkish tinge. Prints having a reddish or yellowish tinge are apt to gain, that is, the engraving yields a much denser print than the original. In the case of prints of a bluish tinge, the print comes out lighter.

"Fortunately the greater majority of the prints made in both amateur and professional photography lend themselves readily to reproduction by half-tone engraving, the availability of the photographs resting largely in the detail and proper lighting of the subject."

The Editorial Table.

Thoreau's Seasons. "Summer" and "Winter," from the Journal of Henry D. Thoreau, edited by H. G O. Blake. Boston and New York: Houghton, Mifflin & Co.

In a recent number of the magazine, we spoke of the volume devoted to Autumn in this series of the Seasons, as described by extracts from Thoreau's Journal.

We now have the pleasure to call our readers' attention to the volumes descriptive of Summer and Winter in the same series, which, though published before the Autumn in point of time, have not before been presented to our readers in completion of the series.

It was generally understood by Thoreau's friends previous to his death, that it had long been his intention to publish an account of the four seasons very similar to that which his literary executor has now given us from his journals, and we may congratulate ourselves that it is as near what Thoreau would have done as is possible by any hand but his own. Every one of the four Seasons teams with interest to the lover of nature, and is full of word pictures, which photographers and those looking for the pictorial in nature, will especially appreciate. They are all faithful descriptions of actual pictures in nature which Thoreau, himself, saw. They contain no actual illustrations, though the volume devoted to Summer has an excellent map of the town of Concord and vicinity, where Thoreau lived, and which he so faithfully described. The volumes are uniform, as to type, paper, binding, etc., and in all respects so far as the book-maker's art is concerned maintain the high standard of excellence so long established by the publishers of these books. Price, $1.50 per volume.

We have received from Mr. L. M. McCormick, of the U. S. National Museum of Washington, D. C. an excellent photograph of the dome of the Capitol, taken at night, by means of an electric search light of 320,000 candle power, turned full upon the dome at a distance of about a mile. A Seed 26 plate was used with full stop and the exposure lasted about 20 minutes. The picture is highly successful under the circumstances.

We have received from Mr. John J. Hoyt, of Vergennes, Vt., a very pretty 5 x 8 photograph, showing an old man seated by a spring. The picture is very aptly entitled "Meditation."

We have received from Mr. M. R. Coleman, an amateur photographer of Kidder's Ferry, N. Y., a very pretty 5 x 8 photograph, showing a bit of shore, at Cayuga Lake, New York.

The Domestic Monthly for November has a very interesting article on pastimes in Chautauqua, by Miss

Grace Livingston, the popular author and orator. It is well illustrated by half-tone engravings from negatives by students of the School of Photography.

Mr. O. P. Miller, of Springfield, Ohio, sends us two very pretty 4 x 5 pictures of still life. One shows a group of cats sleeping in their natural positions, and the other entitled "Pictures," is an attractive subject depicting a little girl looking at a picture book. Both the pictures are technically well made.

The Geneva Optical Co., of Chicago, has issued a very complete price list of cameras, lenses, and all other apparatus requisite for the practice of photography by both amateur and professional, conveniently classified and fully illustrated.

The photographic department of this enterprising firm is, as our readers already probably know, under the able management of W. H. Walmsley, formerly of Philadelphia.

The catalogue can be obtained by addressing Geneva Optical Co., enclosing 10 cents at 67 and 69 Washington Street, Chicago, Ill.

The Frena.—We have received from Messrs. Williams, Brown & Earle, of Philadelphia, a descriptive hand book of the new Frena Magazine Camera for films, manufactured by Messrs. R. & J. Beck, of London.

The Frena is a small, light case, covered with black morocco leather, and provided with a strap handle, which prevents the chamber containing the films from being opened by those whose curiosity is greater than their discretion.

In the front of this case is the lens aperture, which is closed when the camera is not in use, by a black, trefoil-shaped cover plate. On pushing this aside the shutter plates of steel and aluminium become visible. It is by the revolution of these plates that the lens is opened for a momentary glimpse of the chosen scene. The exact duration of this glimpse may be varied in an exceedingly simple and certain manner, from one-eightieth to one-fifth of a second, the respective fractions being designated by numerals engraved upon the aluminium regulating plate. Prolonged or time exposures may be obtained by pulling out a small black button, which will be perceived on the top of the case, close to the left-hand corner.

On the right-hand side of the case, near the front, in a small circular sinking, there is a knob which may be moved by gentle pressure. This knob forms the shutter set-off, and when pushed in takes the picture.

Below the lens aperture is a small projecting disc or winder, one revolution of which serves to set the shutter. The construction of the shutter is such that it cannot be over-wound, and that it cannot be set off a second time until it has been re-wound.

Record of Photographic Patents.

486,170. Implement for withdrawing Photograph cards from Album leaves. William R. Vansant, Philadelphia, Pa.

486,397. Camera Shutter. Geo. Eastman, Rochester, N. Y.

FAR-FETCHED.

"SHE never cared for him, and only gave him her photograph for a joke."

"And yet he felt proud because he was able to boast of carrying her photograph all around the world with him."

"Well, that's carrying a joke too far!"

Queries and Answers.

378 GEO. A. A.—I have been for some time anxious to know how the so-called "skim-milk" prints are made, and a reference to the subject in the last issue of THE TIMES leads me to ask you for information. Will you kindly describe the process, or refer me to some publication in which it is explained.

378 *Answer.*—See page 304 and 305 of "Wilson's Photographics," Chautauqua Edition. (A. Hesler's Method.)

379 M.—I saw some time since (in THE TIMES, I think) a formula for increasing contrasts in negatives by the use of an aniline dye very sensitive to light. I have searched in vain to find it again. Will you tell in "Queries and Answers" what special compound is used, giving the commercial designation as well as the scientific, or if it is not in common use telling how it may be procured.

379 *Answer.*—Our correspondent does not state distinctly enough what he desires to know, to enable us to answer explicitly. In the photographic sense of the word aniline colors are not sensitive to light, they bleach under its action, or does he refer to orthochromatic methods?

380 C. L. A.—I find the yellow screen or ray filter rather an impediment when working orthochromatic plates, focus cannot be taken as accurately with as without it, and much valuable time is lost in consequence. Is there a possibility to dispense with the screen when reproducing colored fabrics, containing much blue and violet?

380 *Answer.*—Mons. Vidal recommends to immerse the plate in a solution of ammonium picrate, which gives it a yellow color, and states that by this method the violent action of blue and violet is perceptibly depressed.

381 H. P., who is a great and very diligent student, inquires frequently for books on photography, where published, their prices, contents, etc., etc.

381 *Answer.*—Percy, Lund & Co., of London, Eng., have published an index, under the name of "Photographic Literature," which contains practically the names, etc., of all books and journals on photography, written in the English language. This will be probably a great help to him.

382 IN TROUBLE.—A formula for a certain developer prescribes neutral sodium sulphite, but the article, obtained from otherwise perfectly reliable houses has proved to be invariably of more or less alkaline reaction. Where can I get perfectly neutral sulphite?

382 *Answer.*—Perfectly neutral sodium sulphite is apparently made for analytical purposes only, and commands a much higher price than photographers generally care to pay for. The sulphite made for photographers' use is unfortunately always more or less alkaline, as you state. We have neutralized the alkalinity of the salt, when in solution, with sulphurous acid water, and to our entire satisfaction.



E. Kiewening, Photo.

MONUMENT AT THE SOUTH CEMETERY, MUNICH.

(Negative made with a Rodenstock Bistigmatic Lens.)

CHAUTAUQUA SUPPLEMENT

TO THE

Photographic Times.

CONDUCTED BY PROFESSOR CHARLES EHRMANN.

NOVEMBER, 1892.

NOTICES TO STUDENTS.

The Chautauqua system of education will be adequately represented at the Department of Liberal Arts at the World's Fair in Chicago. One day of the session of the World's Fair Auxiliary will be devoted to Chautauqua interests and full exhibits of the Chautauqua methods will be made. By the desire of our Chancellor, the R. R. Dr. J. L. Vincent, the School of Photography has been invited to send contributions to this exhibition and the instructor of the school calls now upon the students, of all classes, graduates and undergraduates, to assist him to make the exhibition a success. But little wall space can be devoted to the school, and the majority of pictures contributed will be arranged in albums. Photographic views of the Assembly Grounds, or portraits of professors and instructors alone, will be framed.

We draw no limits as to the number of prints to be contributed, but the instructor reserves for himself the right to select from them only such as are up to the Chautauqua average. All pictures must be mounted and burnished, and may be printed by any of the methods taught in the school; they are desired to be of from 4 x 5 to 8 x 10 inches. There is no necessity to describe the method by which they are made.

Transparencies, larger than lantern slides, are to be framed.

As it will require much time and attention to arrange the contributions properly, the instructor requests to have all exhibits in his hands before the 1st of April, 1893.

The seventh volume of "The American Annual of Photography" has just been published by The Scovill & Adams Co. The ever-increasing, and at the present time enormous circulation of this review of photographic matters, discoveries and inventions during the year past is a guarantee for its value as a book of reference and of general as well as special information. The contributed articles written by the foremost American and foreign scientists and practitioners, the standard formulas, tables on chemicals and a variety of other subjects, information on postal affairs, on the signal and the weather bureau, a carefully prepared calendarium, and, not least, a very large number of beautiful photographic and photo-mechanical illustrations, besides many cuts printed in the text, are proof of our assertion.

"The American Annual of Photography" is not included in the reading prescribed to the students of any of our classes, but the instructor of the school recommends the book to all our members and ex-members.

THE ADVANCED CLASS.

Students of the first term of this class will read in Roscoe's "Elementary Chemistry," from page 1 to 160, in Burton's "Optics," the first 3 chapters.

Those of the second term will receive special instruction.

All students of this class are expected to communicate frequently with the Instructor and show specimens of their work.

THE LOCAL CLASS

has been opened on Nov. 14th, at the school headquarters, 423 Broome Street, New York.

Cost of a course of 10 lessons, $7 50.

Special lessons, per hour, $1 00.

Ten lessons in portraiture, $10 00.

QUERIES ANSWERED.

No. 595.—What are the stop valuations of my Henry Clay 5 x 7 Camera?

Answer.—

f/8.5	=	$\frac{15}{16}$	inches diameter
f/11	=	$\frac{23}{32}$	" "
f/16	=	$\frac{8}{16}$	" "
f/21.3	=	$\frac{6}{8}$	" "
f/32	=	$\frac{2}{8}$	" "
f/42.6	=	$\frac{3}{8}$	" "

The focal length of your lens is 8 inches

No. 485.—1. Silvered albumen paper was laid between ordinary office blotters. The following

morning I found the paper covered with a multitude of yellow and brown spots. What is the cause?

2. Paper not blotted but hung up to dry immediately after sensitizing behaved better, printed satisfactorily, but the proofs turned greenish in the fixing bath, and the whites yellow. Explain why.

3. The silver bath is of 1 ounce of nitrate of silver and 8 ounces of water. Is it strong enough for three crown paper, and how many degrees of the hydrometer should it indicate?

4. I have toned a large number of aristo prints in the bath recommended by the instructor of the school. The first batch toned in from 20 to 25 minutes, the prints were brilliant and of good color. The second batch was as good but the prints toned much quicker, in from 10 to 12 minutes, and the third time the prints were of that nasty green tone and yellow whites before 4 or 5 minutes had expired.

Answer.—1. Ordinary blotting paper contains generally much hypo, or as paper manufacturers call it, "antichlor," because it destroys the hypochlorous salts used to bleach the paper pulp. Blotters for photographic use have the antichlor well eliminated, but those intended for ordinary use have not been treated as carefully.

2. The tone of your prints is in this case not the consequence of an incorrectly compounded bath, or the method of sensitizing the paper. The prints shown to us were originally much too dark, and with the intention to bleach them to some extent you have left them in the fixing bath for an unreasonably long time, when the solution will at last act exactly like the combined bath used for aristo paper and cause the formation of sulphide of silver. For that reason ought albumen paper be always fixed in fresh hypo solution, and when a large number of prints are to be fixed, fresh hypo be added occasionally or the fixed print be passed through a second hypo bath. In a solution 1 in 8 an albumen print will fix in from 8 to 10 minutes, provided it is kept in constant motion. The function of the hypo bath is to dissolve those parts of chloride of silver not acted upon by light, and the argentic hyposulphite of soda formed in consequence, but we never expect to make an excessively dark print lighter in the hypo.

3. Your silver bath is rather strong for Three Crown paper. One ounce of silver, ten ounces of water, and carbonate of silver enough to make the solution neutral is about the proper thing. Such a solution should indicate 40 degrees. Keep the strength up to this standard by adding fresh silver after five or six sheets have been sensitized.

4. After fixing and toning from twelve to fifteen prints, add about two ounces of fresh hypo solution 1 in 8 to your bath, and do so till all the gold is exhausted. The addition of fresh hypo counteracts the chloride of silver taken from the prints, which in itself is an accelerator in the combined process.

No. 499 has a single achromatic lens of $8\frac{3}{4}$ inches focus, and of $1\frac{3}{4}$ inches in diameter. He wants to use it for landscape purposes, and asks where to place the diaphragms when mounting it, how many of them and of what diameter they should be?

Answer.—To find the place for the diaphragms, erect upon the centre of the diameter of the square of the focal length a perpendicular, and on its apex draw a line of the length of the lens diameter. Lines drawn from the ends of the base, and along the ends of the line representing the diameter of the lens will meet at a point beyond it. The diaphragms must be placed at that point. You may use three diaphragms of $\frac{9}{116}$ of an inch diameter $= f/15.5$, $\frac{7}{116} = f/20$, and $\frac{5}{116} = f/28$. A smaller one will hardly be needed.

No. 484.—1. Is three minutes long enough to float paper on the cyanotype solution described in Lesson XI?

2. May the same solution be used over and over again?

3. Are the single solutions, before being mixed, sensitive to light?

4. My blue paper prints yellow in the lights, they are not as brilliant as they should be, and as I have seen in Chautauqua. What is the cause of it?

5. Blue prints, too light, I have seen you to intensify. How is it done?

Answer.—1. Float the paper till it lays flat down upon the solution. Remove it as soon as the tendency of the edges to roll up is not perceptible any longer.

2. It may not. The solution keeps well enough for a day, not longer.

3. They are but slightly so. It is best to keep them in the dark.

4. Probably the fault of your ferricyanide of potassium. Use it only when in large ruby crystals; when powdery, or covered with a light yellow powder, it is partly deoxidized into the ferrous salt, which should never be used. Or possibly your paper is not good. Use the Steinbach medium roll.

5. Blue prints when too light, can be intensified

by soaking in a solution of 1 drachm of ferric chloride U. S. P. in 1 quart of water for one or two minutes. When soaking too long or when the solution is too strong, the deposit will become of a muddy color.

No. 588 is anxious to get her examination papers, and at the same time asks for information on the new developer—amidol.

Answer.—The examination papers for the school year 1892–93 will be sent by December 1st, but if you did not read as attentively as you are desired to, you will hardly pass, we are afraid. The Photographic Times, present volume, has an article on amidol, on page 337, which seems to have escaped your attention, else you would not ask. As all our examination questions have been taken from the required reading, and as we expect all our candidates have paid proper attention to it, there is not the remotest doubt all will pass, with the exception of those who have not sufficiently informed themselves. There is plenty time to read during the winter evenings. Do so and the much-coveted diploma will be awarded to you.

Pictures Received.

No. 461.—"A non-prohibitionist" and "legs and feet" of a boy, made for a sulptor's use, are both well lighted and printed photographs. They are on blue paper and well done. In these days of aristo-prints of all possible colors, it is refreshing to see sometimes one or two made after an arthodox formula that has stood well in the estimation of photographers for half a century.

No. 605.—Four very pretty 5 x 8s. A student but a few months in the class is doing well and her work is very encouraging. No. 1 is a splendid landscape with children in the foreground. Had they been placed in more natural positions and their heads been turned from the direction of the camera, the group might have enchanced the beauty of the picture. No. 2, "General view of a farm yard." Quite good, slightly over-exposed. No. 3, excellent picture of a cottage, probably the dwelling of Madam. No. 4, portrait of old gentleman. Under-exposed and sombre in every aspect.

No. 495.—Two cloud pictures taken on carbutt orthochromatic plates with ray filter of moderate intensity. No. 1, Cirrus Cumulus is magnificent, the sky is of moderate tone, not too dark, as often is seen, and the white and highly illuminated clouds of wonderful brilliancy. No. 2, cumulus, we do not admire so much, although the subject is more difficult. Owing to very abrupt illumination, lights and shades are in too great contrast; or has our fair friend restrained her developer so much as to lose delicacy?

No. 567.—Two 5 x 8 landscapes, one a distant mountain view with nicely arranged foreground, the other an old mill surrounded by trees. They were printed from very good negatives upon Whatman's drawing paper, prepared with solution No. 2, of Lesson X.

We are sorry to see such beautiful negatives printed in this manner. If it must be matt-surface, why not use Rives or Saxe instead of Whatman, which is entirely too coarse for such small and delicate work? For large portraits with broad light and shadowed effects it may do very well, but for small landscapes, so full of the finest detail, the student ought to have chosen "Three Crown Albumen," which he knows so well how to handle.

No. 332.—Several vignetted landscapes, foliage very much under-exposed, harsh and chalky. We do not advise you to vignette such pictures. The harsh effects you intend to soften down still remain, and the vignette has not been far enough from the negative to produce what you wanted to. Vignetted landscapes are perhaps attractive to some, to us they are not; it seems often they are made only to hide some defect of the negative.

No. 593.—"Lake Chautauqua in a Storm," taken instantaneously, with a Waterbury B, stop *f*/25, on Carbutt orthochromatic plate No. 27, and the Elite shutter. Very good.

No. 87.—"Bunch of Cattle," taken with a wide-angle lens. Very much distorted. Look at the steer in front: the animal is terribly out of proportion. For such work a rectilinear or aplanate would do much better.

No. 681.—"The New Union Class Building and Fountain in front," is not at all attractive. You cannot very well take the two in one picture, there is not space enough to make the fountain accessory to the class building, and make a pretty picture of it.

No. 541.—"The Amphitheatre on Grand Army Day." The likenesses of the people on the platform, figures very small, are recognizable. Drs. Duncan and Hurlbut's are striking; Rogers band and instruments are sharp; flags, banners and floral decorations very fine; a correctly timed and exceedingly well-developed picture. Of the thousands of attempts made to photograph the amphitheatre, this is evidently the best we have seen.

No. 691.—A 4 x 5 group of children taken with the Waterbury A lens, on Carbutt orthochromatic

plate and printed on Bradfisch aristo paper. Excellent work of a student who but recently joined the Corresponding Class. We wish the young lady continuous success.

No. 485 has sent quite a large collection of pictures of various qualities mainly for the purpose to inquire the cause of several failures in printing. The first three of a decidedly greenish tone, and the whites very yellow, have been too long in the fixing bath. The next, a rocky glen, from very fine negative, shows the same, not quite as much, however. Two mountain views, are from very feeble negatives, and if the student is so very much opposed to intensifying as he appears to be, we advise to fume his paper much longer than usual in the vapors of ammonia, and print in very weak light. "A locomotive" is entirely too dark, a landscape with massive rocks in the foreground is excellent.

We think if No. 485 will go back to old principles and readopt the Chautauqua toning bath, he may have more uniform success.

Later in the month the same student sent two other pictures, a group of young people, and a railroad station on the Union Pacific road. Both are from very beautiful negatives. The tones are very good, but they are full of little yellow spots, caused by hypo in the wrong place in all probability.

No. 282.—An instantaneous view of the spot where Darius crossed the Hellespont with his host of Persians to invade Greece. From historical associations highly interesting, as a picture and an excellent photograph. Mrs. B., one of the originators and first members of the Exchange Club, has unfortunately given but little direct attention to school work of late. We ask her politely to let us hear from her oftener and by all means to come back to the Club.

No. 495.—1. A family group taken in very much diffused light, photographically speaking, in darkness almost. Very much under-exposed, and too feeble to print from even after intensifying. We understand our fair young student had to make this picture *to order*, and why she did not under the circumstances resort to the aid of magnesium flash light, which she is so able to handle, we cannot understand. Now she wants us to tell her how to make a tolerable print from the negative as it is, or what else to do to improve it. We reply, print on aristo paper in extremely weak light, cover the faces and all those portions requiring to print light or white with opaque, but on the glass side, print till the darker parts are sufficiently well out, remove the opaque, and print the light portions deep enough to give somewhat of a harmonious effect to the whole. Or make a diapositive by contact, and from it a negative again. Under-expose and develop with old hydrochinon in one solution, like the concentrated S. P. C.

2. A pair of chickens. Very fine.

3. A group of three children, taken under the skylight. Very well posed and lighted. The accessories are positively bad. The curtain is not plastic, the bearskin and cushion superfluous. Had the student made the group on a plain ground, and vignetted the print, we might call the picture a decided success.

No. 207.—Several landscapes and groups, taken last summer on the Assembly Grounds. Excellent work, with the exception of one picture, a view of Palestine Park, which is rather too weak to yield a brilliant effect, although the point is well chosen. An art critic will probably be better pleased with it, than an orthodox technist.

No. 573.—Visited our office on his return from Europe, and has shown us a large collection of very beautiful flexible film negatives, taken during his sojourn, with the Henry Clay camera. Mr. F. will be a shining light in our Chicago exhibition, we expect.

No. 476.—Collection of views of the naval parade during the Columbus festival, on 5 x 7 plates, with the Henry Clay camera. When we consider the hazy atmosphere hanging over the Hudson when our warships and merchantmen steamed up the American Rhine, we are astonished how well the student has succeeded in the difficult task. The U. S. steamer Philadelphia, the French flagship Hussard, and the boats of the New York Fire Department are especially fine. Another candidate for laurels to be earned in Chicago.

No. 557 has sent two landscapes of first-class quality, merely to show them as specimens of printing on extra brilliant albumen paper. He does not seem to be satisfied with his own work, but we assure him there is every reason to be so. We cannot find fault with his printing. He has also a "Portrait of Child," rather a large head, too large for the subject and the space. The position is not natural, too much inclined, in consequence whereof the head is somewhat foreshortened. If a head must be taken in such excessive dimension, a very long focus lens will do, perhaps, but not one of short focus.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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THE SCOVILL & ADAMS CO.

"The American Annual of Photography" for 1893, which will be ready on December 1st, as announced, will contain thirty full-page pictures in the body of the book, besides many pictorial illnstrations among the sdvertisements. It will include over one hundred original contributions by the best known photographers, both professional and amateur, of Europe and America. Every subject is treated from posing and lighting the subject; the composition of a figure picture; all points of view of a landscape, through developing, printing, and toning to mounting and finishing the perfected photograph. It contains, moreover, many new tables of great value with all the latest and most approved formulas, revised list of photographic societies, record of patents, new books, and in short, everything relating to photography, filling in all more than 500 pages. It will be an indispensable handbook for the photographers, young and old, amateur and professional.

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Nineteenth.—Because it is not an experiment, having reached its 22d year.

Twentieth.—Because, in short, it will pay you to advertise in it.

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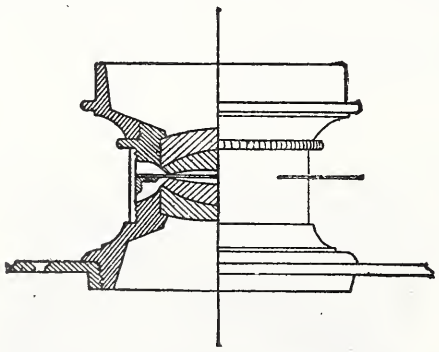
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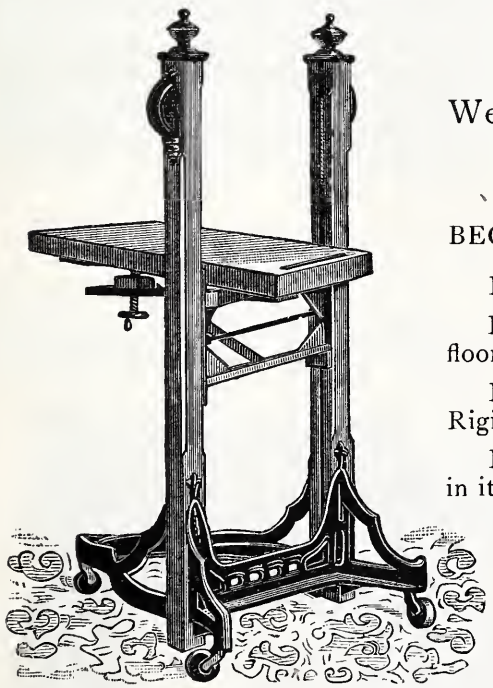
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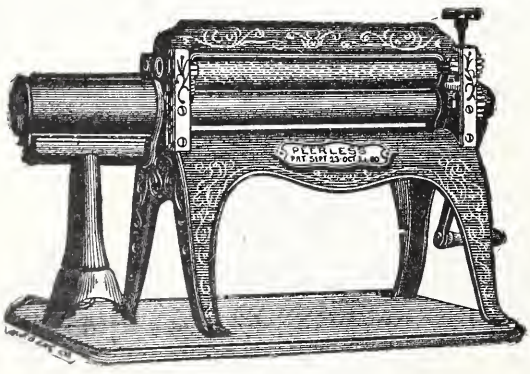
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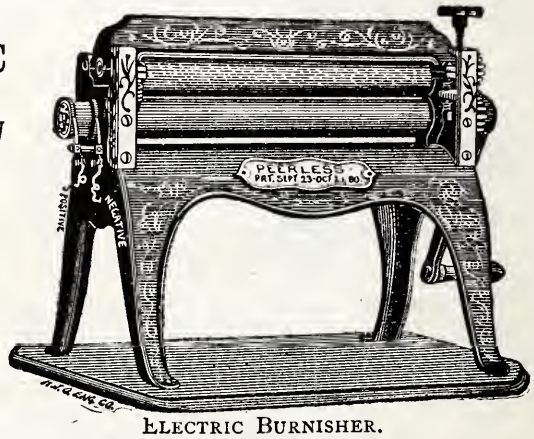
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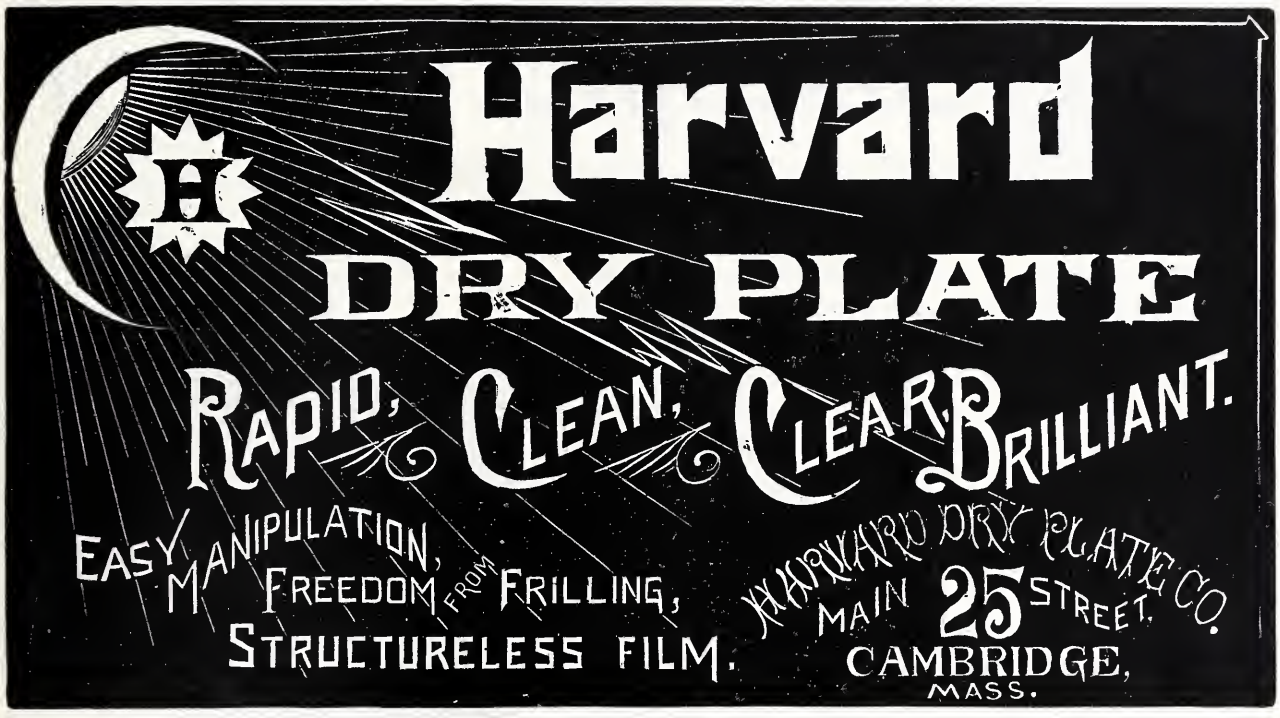
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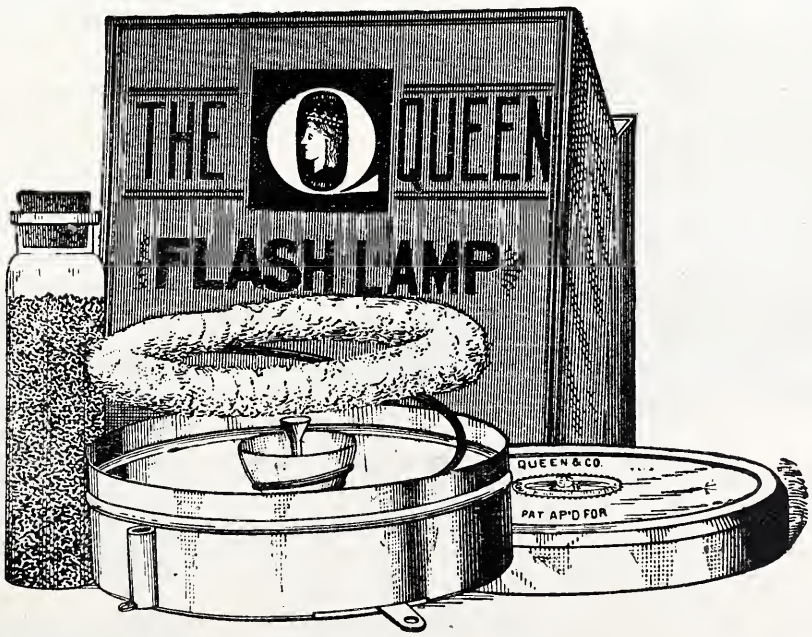
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$1.50

STATISTICS:

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Diameter 4 "
Weight 4 ounces.

Charge (small) 20 Gr., (costs about 1½ cents.)
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Size of room effectively lit when good lenses are used, about 25 x 30 ft.
Size of room effectively lit when cheap lenses are used, about 16 x 20 ft.

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Jas. W. Queen & Co., Phila

THE 5 x 7 HENRY CLAY
Stereoscopic Camera
FOR TRIPOD AND HAND USE.



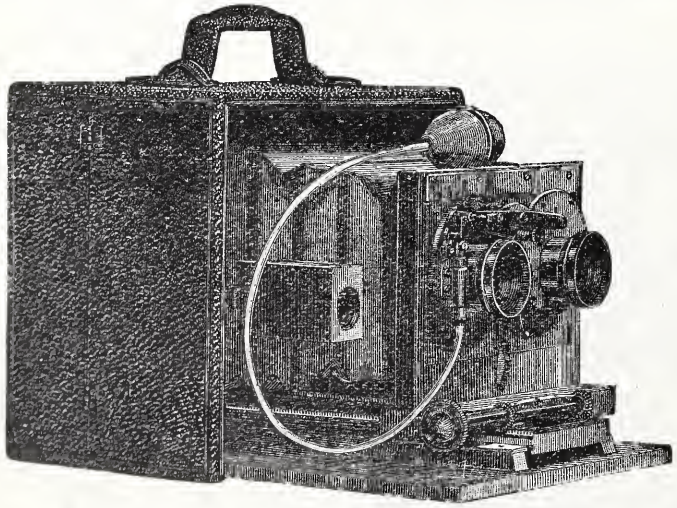
It is commonly known that of all pictures, those which are arranged to give the stereoscopic effect when viewed in a stereoscope, convey the true impression of perspective and solidity. It seems strange, indeed, that of the myriads of instantaneous pictures made, so few are taken with reference to their future use in connection with the stereoscope, *for it is only by that means that the idea of perspective and solidity can be conveyed.* We can only assign as the reason the present almost universal use of hand cameras, and that none of them have, up to this time, been arranged for stereoscopic pictures.

There is a much over-worked phrase—"the long felt want," but we think that just that, literally, will be met by the new hand camera which the American Optical Company have just finished.

The first illustration shows one of these cameras closed, and you will observe there is no external opening for finder, lens or anything to indicate that the leather-covered case contains the appliances which go to make up an instantaneous camera.

This camera measures eight inches high, nine inches long and five inches wide ; its weight is about five pounds. It has a screw plate underneath, so that it may be used with a tripod. It has a door in the back of the case, and through that opening the image thrown by the lenses may be seen on the ground-glass focusing screen.

The second illustration shows the appearance of the camera when open. The pair of Rapid Rectilinear Lenses is fitted with a triplex stereoscopic shutter with pneumatic release, made by the Prosch Manufacturing Company.



The camera is furnished with a focusing scale and a reversible finder. Either half of the stereo. negatives when cut in two are of a size suitable for making lantern slides from.

This camera may also be used to take a single picture of the size of the ground-glass focusing screen (5x7 inches), either vertical or horizontal. In the former case the reversible finder comes into use. The septum which divides the camera inside is arranged so that it may be easily taken out, the stereo. lenses are mounted on a removable front, and an extra front is furnished on which may be placed any lens of not over seven and a half inches equivalent focus.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release,** $75.00

This camera can also be made with vertical sliding and swing front. By means of the former the proportion of sky and foreground may be adjusted ; the latter permits the taking of subjects which may be either above or below the level of the camera and still preserve the lines vertical.

PRICE, **with a pair of Rapid Rectilinear Lenses and Prosch Stereoscopic Shutter with Pneumatic Release, and with vertical sliding and swing front,** . $80.00

A 5x7 Roll Holder for Transparent Films can be furnished with either of the above forms of this camera for $15.00 additional. This addition would make the case about two inches wider and one-quarter inch higher.

THE SCOVILL & ADAMS CO., 423 Broome Street, New York.



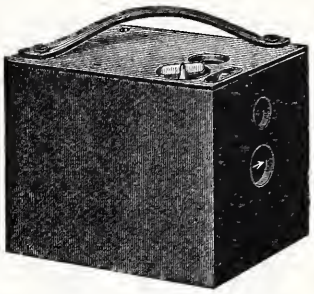
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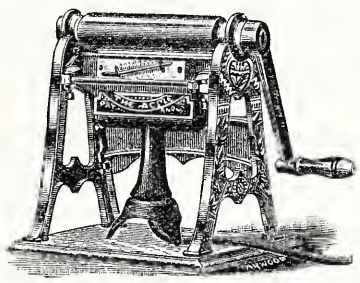
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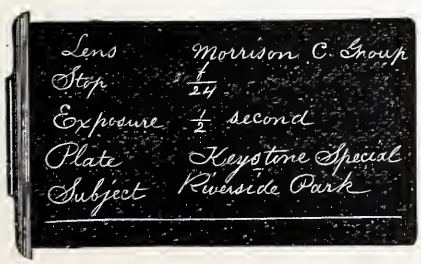
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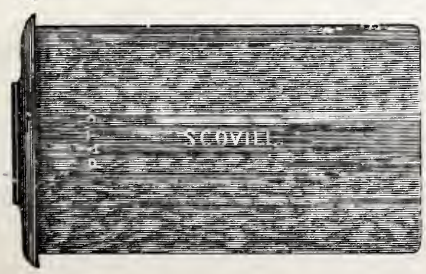
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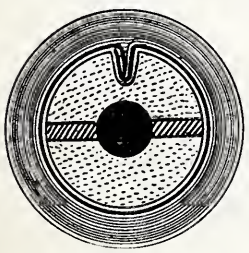
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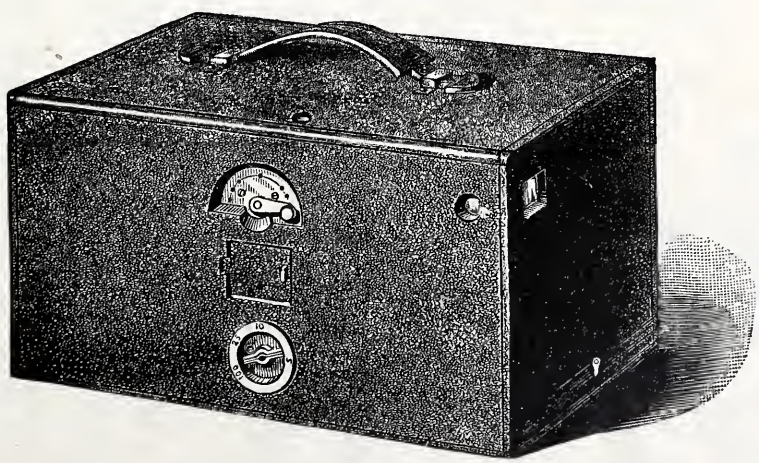
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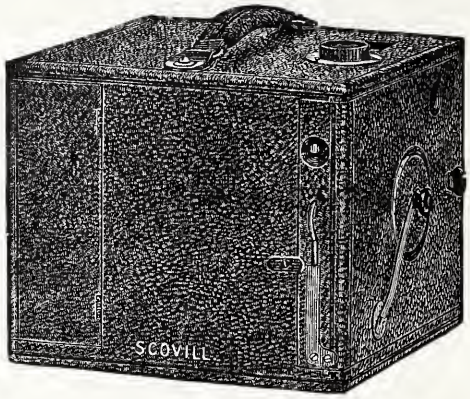
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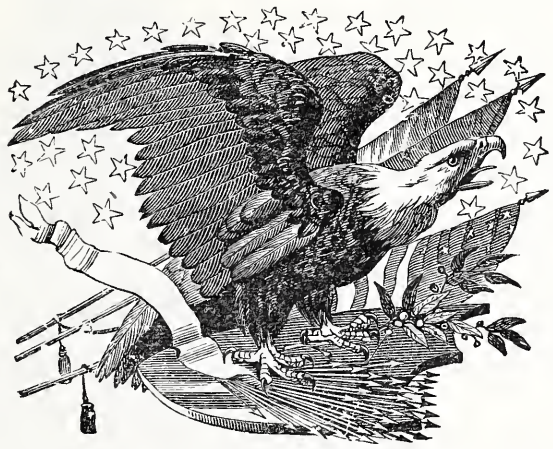
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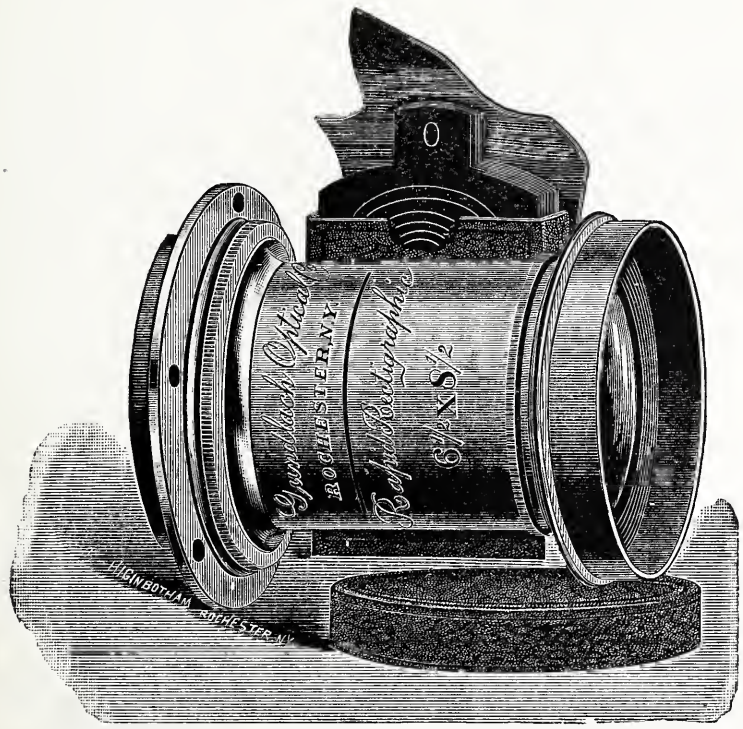
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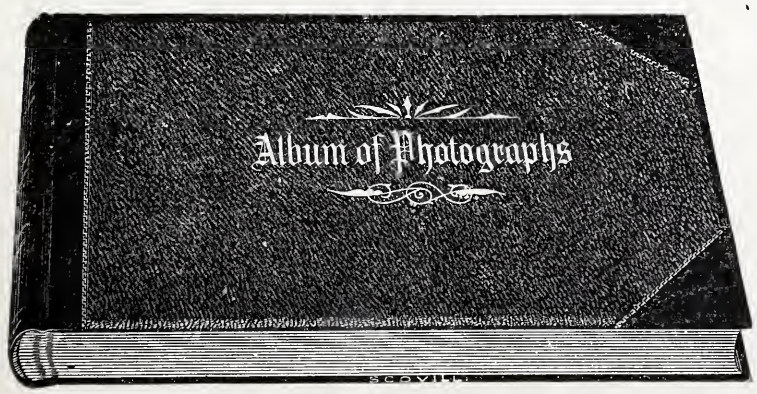
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(OVER.)



THE START

THE PHOTOGRAPHIC TIMES.

VOL. XXII. DECEMBER 2, 1892. NO. 585.

CHAMPION WHEELMEN.

THE three bicyclists whose photographs are shown in our picture have made records which a few years ago would have been thought impossible. Mr. A. A. Zimmerman is undoubtedly the best known cyclist in the world at the present time, his victory during the past season on both sides of the Atlantic being world renowned.

Mr. Zimmerman in his earlier days rode a Star, on which machine he was a fair, though by no means, a champion performer; it was when he took to the pneumatic-tired safety that he commenced to show record breaking form, and in the Fall of '91 rode several remarkable races.



BREAKING THE RECORD.

Early in the season of '92, Zimmerman visited England, and though he was defeated at first he proved himself the fastest man in the country as soon as he got fit by defeating all comers in the English one, five, and fifty mile championship, he also established several new English records, the best of which was 1 minute, 5 seconds for one-half a mile, and this too on a track four laps to the mile.

Since Mr. Zimmerman's return to America he has met and defeated all the American and Canadian cracks, and has also established many records. He is the present holder of the 2-mile championship of both the Metropolitan Association and the All American A. A. U. championship. His best performances are one-quarter mile with a flying start in 27 seconds, and 1 mile, flying start, 2 minutes, $6\frac{4}{5}$ seconds.

Mr. G. H. Banker is a rider of great promise; though not yet 21 years of age he has shown himself capable of holding his own with the best riders on the track. At the Passaic games, September 3d, held at Clifton, he rode a mile, less 20 yards, in 2 minutes and $17\frac{1}{5}$ seconds, and that, too, through a large field of competitors, which would make his time for the full mile about 2 minutes and 19 seconds.

Mr. Banker finished second to Zimmerman in the A. A. U. 2-mile championship, defeating, amongst others, Geo. Taylor, W. F. Murphy, C. Hess, etc. Good judges think that with a little more experience Banker will show himself equal to the world's record. He has just commenced a three years' term at Princeton college, and will compete in the intercollegiate games next year against the cracks from Harvard.

Very few bicyclists have come to the front so rapidly as Geo. F. Taylor, of the M. A. C. His performances during the last few months have been startling. He opened the season by riding a quarter mile from a standing start in $32\frac{4}{5}$ seconds, at Hartford, July 4, 1892, which broke the then existing record. August 3d he rode three-quarters of a mile in 1 minute and $36\frac{4}{5}$ seconds, breaking "Hindle's" record of 1 minute and 41 seconds. "Hindle" has since regained the laurels with the time of 1 minute and 34 seconds.

Taylor holds the *world's* record for one mile

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made in competition, viz: 2 minutes and 15⅘ seconds. He also twice broke the mile record against time, accomplishing 2 minutes and 14⅕ seconds, and 2 minutes and 11 seconds, which, however, has since been improved upon, the present authentic figures being 2 minutes and 5⅖ seconds, by H. Hindle.

At Buffalo early in June, Taylor rode three miles in competition in 8 minutes and 7⅖ seconds. Mr. Taylor is a graduate of Harvard college.

Mr. P. F. Berlo, of the M. A. C., has made many wonderful records on the bicycle; previous to the present year his fastest mile was 2 minutes and 18 seconds. His first record in 1892 was accomplished at Hartford, July 4th, where he rode one-quarter mile in 28⅘ and one-half a mile in 1 minute and 5⅘ seconds, wiping out H. C. Tyler's figures of 1 minute and 6 seconds for the latter distance, which had stood since the previous October.

August 24th, Mr. P. F. Berlo established a new record for 2 miles, riding the distance in 4 minutes and 48 seconds.

Both of the above records have since been improved on. Nevertheless, Berlo is competent to meet the fastest of the cracks. His best performance in competition during the season was at the Riverside Wheelmen Meet, where he won the 10 mile championship, defeating Munger, Lumsden, Thom, Banker, etc.

John C. Hemment.

AMERICANS THE WINNERS.

IN the annual competition in lantern slides, instituted by the English journal, *Photography*, two members of the Society of Amateur Photographers of New York were awarded five prizes:

Wm. B. Post, first prize, Silver Medal; class, Marines; second prize, Bronze Medal; class, Street Life.

Alfred Stieglitz, second prize, Bronze Medal; class, Portraiture; second prize, Bronze Medal; class, Genre; third prize, Certificate; class, Landscape.

Messrs. Post and Stieglitz were the only competitors outside of England. There were 120 competitors, and the total number of slides were 720.

The Judges were H. R. Leach, Midland Camera Club; A. J. Leeson, Birmingham Photo Society; Henry Sturmey, editor *Photography*.

PHOTOGRAPHY ABROAD.

PHOTOGRAPHY OF THE SOLAR SPECTRUM.

AT the meeting of October 24th, of the *Académie des Sciences*, Mr. Lippmann presented some very fine photographic impressions of the solar spectrum, obtained without the agency of the silver haloid salts, by exposing to the images of the camera obscura plates prepared with bichromated gelatine and bichromated albumen. Bichromated gelatine is deprived of its hygroscopic property by the action of light. The image is not visible on the removal of the plate from the camera obscura, but it suffices to wet to develop it with the colors of the spectrum, and, besides, if it is examined by transparency on a sheet of white paper the complementary colors are visible.

PHOTOMETRY.

Mr. Charles Henry presented at the same meeting of the Academy an apparatus, which he calls *photo-photometer*, to measure the weak luminous intensities. This apparatus is based on the law of the deperdition of the light evolved by phosphorescent sulphide of zinc. He impresses to saturation a plate of sulphide of zinc, then compares it to the light to be studied in taking note of the period elapsed from the instant the luminous deperdition of the phosphorescence of the plate takes place to that when the two intensities appear equal. By adding this period in the formula he has given in a previous communication, or, more simply, by means of the curve which represents this law, he determines the intensity of the light under examination.

Mr. Charles Henry has been able to thus measure with his apparatus the diffused light of stars on a fine evening of last August. He finds that this light is equal to that of a candle placed at a distance of forty-one meters.—*La Nature.*

CITRATE OF PARAMIDOPHENOL.

Citric acid is a good solvent of paramidophenol; for example: 95 parts of paramidophenol can be dissolved, states Mr. Liesegang, by adding them gradually, in agitation, to 200 parts of a solution of citric acid by equal parts. The solution is red brown, possesses an acid reaction which is not modified by that of sodium sulphite. The alkaline carbonates form a precipitate which slowly dissolves in sodium sulphite and rapidly in caustic potassa.

The following compound forms a developer yielding an image full of details, intense, and of a blue-black color:

Water	50 c.c.	= 850 minims
Citrate of paramidophenol, sat. sol.	1 c.c.	= 17 minims
Sulphite of sodium, sat. sol.	4 c c.	= 68 minims
Carbonate of sodium, sat. sol.	5 c.c.	= 85 minims
Caustic potassa, sol. at 1:10.	2 c.c.	= 34 minims

The following developer is not so energetic, and does not give as intense an image:

Water	100 c.c.	= 1700 minims
Citrate of paramidophenol, sat. sol.	2 c.c.	= 34 minims
Sodium sulphite, sat. sol.	50 c.c.	= 850 minims
Carbonate of sodium, sat. sol.	50 c.c.	= 850 minims

In this developer the image appears in about ten seconds, and when of the proper intensity, the color is black.

Very fine warm brown tones are obtained if, after having diluted the solution with 50 c.c. of water, one renders it slightly alkaline with caustic potassa. The image is then very intense, and the developer, turning brown by oxidation, becomes very soon useless.

Dr. Liesegang gives also the following formula to develop his aristotype paper :

Citrate of para-amidophenol	1 gramme	= 15 grains
Sulphite of sodium sat. solution	5 c.c.	= 85 minims
Water	100 c.c.	= 1700 minims

By increasing the proportion of sodium sulphite one obtains a softer image.

Matt Silver Gelatino-Chloride Emulsion for Diapositive by the Printing-out Method.

This process is due to Mr. A. de Lavroff, directeur of the Amateur Photographe russe (St. Petersburg).

One prepares the following solution :

Boiling water	1200 c.c.	= 40½ ounces
Sulphate of baryta, pulverized	110 grammes	= 22½ drachms

After agitating the coarser particles of the sulphate of baryta are allowed to precipitate for two minutes, no more, otherwise the matt appearance of the proof will be too weak ; one decants then the supernatant liquid in an agate evaporating dish heated by a water bath, or a slow fire, and adds in agitating 120 grammes (30½ drachms) of good gelatine and skins the scum which raises on the surface of the liquid. When the gelatine is dissolved, the solution is filtered.

The following operations should be done by the red light.

The gelatine solution is heated to 50 deg. C. (122 Fahr.), and one pours 96 c.c. (25½ drachms) of the three following solutions in order :

1.

Water	100 c.c.	= 1700 minims
Nitrate of silver	22½ grammes	= 846 grains
Alcohol	15 c.c.	= 255 minims

2.

Water	100 c.c.	= 1700 minims
Chloride of strontium	5 grammes	= 85 grains
Alcohol	15 c.c.	= 255 minims

3.

Water	100 c.c.	= 1700 minims
Citric acid	10 grammes	= 154 grains
Alcohol	15 c.c.	= 255 minims

The first, then the second solution are added little by little in agitating. When the mixture of the three solutions is done, one filters.

Before coating the plate, it is necessary to prepare it in the following manner :

With a large brush, the plate, well washed, is coated with a solution of

Water	100 c.c.	= 1700 minims
Silicate of potash	1 c.c.	= 17 minims

After draining, it is allowed to dry. This operation has for its object of securing the adherence of the emulsion of the plate.

When the plates are dry they are coated in the ordinary manner and dried in the dark. The emulsion is sufficient to coat thirteen dozen of plates 13 x 18 (5 x 7 inches).

All the toning baths answer equally well for these plates.—*Photo-club de Paris.*

Dr. Andresen's Amidol

The development with Dr. Andresen's amidol is quite rapid. Mr. Davidson in a communication to the *Amateur Photographer* states that the whites are kept quite pure by adding to 3 ounces of the solution of amidol, 50 minims of a 10 per 100 solution of yellow prussiate of potash, and that a sufficient intensity is, however, obtained.

Citric acid, and, also, potassium bromide act as restrainers.

Pyrogallol and Sodium Sulphate.

In the same journal Mr. Pippel recommends sodium sulphate instead of sodium sulphite in pyrogallol developers, stating that the negatives are very clear and of a black color. He gives the following formula for the preparation of the devel-

oper into which the plate is first immersed, adding afterwards from 2 to 10 cubic centimeters (34 to 170 minims) of a saturated solution of sodium carbonate. Over-exposure is regulated by potassium bromide, and, in the case of under-exposure, the details hanging back, more sodium carbonate should be added together with a larger proportion of sodium sulphate:

Sodium sulphate, sat. sol.....20 to 40 c.c.	=	340 to 680 minims
Pyrogallol..... 1 gramme	=	15⅖ grains
Water.....100 c.c.	=	1700 minims

We do not understand why the sulphate of sodium should be substituted for the sulphite, nor what is its action. We think it is useless, moreover it cannot prevent the rapid oxidation of pyrogallol, and therefore the yellow fog which, in case of long development, is prevented by the sulphite of sodium.

How many strange *ejusden farinæ* formulas are sometimes published! Eosine has been recommended in a developing solution for instantanés, and hydroquinone in the toning-fixing bath to obtain brown tones with bromide paper.

P. C. Duchochois

THE OBJECT OF PHOTOGRAPHY.

[Read before the Photographic Club, London,]

HAVING been asked to open the discussion tonight, the above subject has been selected as being important, and as permitting considerable difference of opinion. Let me indicate at once the broad, liberal lines on which it seems to me the discussion should be pursued. As long as human beings are not created free and equal, although a certain well-known document says so, they will differ materially in their objects and in their pursuit of them. Especially is this true of mental processes, among which, I claim, photography holds no mean place. The object which each worker has in view may, and often does, differ widely from that which he should pursue in order to obtain the greatest possible benefit, and in thus striking the keynote of my paper, I hope to point out in some degree the ideal all camerists should keep in sight. We all know the great moral axiom that we best help ourselves by helping others; indeed, it cannot be otherwise, and this help can be given in many ways, only seen by those whose minds are trained to receptivity of all progressive movements. The human mind is an organ, a function, an intangible, incomprehensible force—what you will; but it is great or small not only according to the impulse behind it, but the use we make of it. We may look at photography through a narrow or wide-angle lens, through the telescope or ordinary view. There is plenty of choice; all depends on the will of the individual worker. Those who are able to learn by everything teachable in the realms of mind and matter will find that in photography these two forces join hands with greater or less energy according to the object of each worker. Those will gain the most whose ideal is the highest, and, as in union there is strength, so photographic workers accomplish most when organized into societies, provided the standard is held high over men's heads and never lowered from fear of criticism, for any purely personal or selfish motive. What if any individual worker should come more prominently than any other into the brilliant electric light of public opinion or approbation? Is that a reason for discouragement or lowering one's own flag? Rather should it be an impetus forward on the principle of the fairy in one of Jean Ingelow's stories. "Don't you know," she said, "that in Fairyland what you can do you may do?" The trouble is, we carry on the fight somewhat on the free-lance principle, and "each one for himself" does not advance the general standard of progress If individual preference be on the high plane of real altruism, well and good; but, usually, the ordinary human being is more exercised in raising his own special average than the general one of humanity.

Let us consider, then, what photography can do to elevate this general average. If nothing, it is worthless; but it can do much and it is worthy of thoughtful consideration.

The adage that "Beauty is its own excuse for being" does not entirely cover photography. The latter adds to the cultivation of the beautiful, and that of the useful. Thousands of feet below the earth's surface, as regards land and sea, has the keen eye of the lens revealed to us once hidden mysteries, and beyond the systems of worlds heretofore unknown has it opened limitless possibilities. What other art or science can claim so much? In the astronomical equipment of Harvard University, near Boston, is being set up the largest photographic lens ever made, to be electrically controlled in correspondence with the motion of the earth. The lens has a twenty-four inch aperture, and will be used on a fourteen by seventeen plate. The time is fast approaching when photography will be utilized in all the countless ramifications of human knowledge, and there is no use in artists or scientists denying what will soon be an undeniable fact. Even on the lowest plane of merely personal help to each individual worker, photography is a pursuit embodying in itself broad scope for culti-

vating the powers of the keenest brain. Much more is this increased when we take into consideration our fellow-workers. Every thought which finds effect in word or act is a stone dropped into the stream of human life, whose widening circles touch and influence countless others.

Speaking of the individual worker, what is and what should be his object in this work? We know they are not always the same thing. He begins, we will say, because it is suggested to him as an amusement, and many never get any further. They can be left out of the question; but to those who once begin to make a study of the work, and find it broaden into one field after another, filling one's utmost limit of mental effort, the interest grows more absorbing as they realize that, however great may be their progress, they will never know all that is to be known. The object which at first is pleasure only in the sense of recreation, becomes then something far nobler as a powerful factor in training—what we speak of so often, and comprehend so incompletely—the human intellect.

If we accept the object of photography as being a mental education, how can it best benefit us? In every study those gain most who come equipped for work by natural or acquired gifts. Perhaps no one faculty in photography is more quickly called into exercise, or more rapidly improves, than that of observation. As this grows keener, the eyes stimulate the brain to act, and in landscape work alone, a fuller, richer appreciation is daily given to the world of nature. The shortest journey shows us what we might otherwise pass by unheeding, and extended travel sends us home benefited by a wealth of experience which many of our fellow-travellers lose. We do not need to go on land and sea for such; often near our own doors we learn to see a constantly varying panorama of change. I do not believe that in any more efficient way can we be helped than by aiding this very faculty of observation, especially in the young, when it can be made a fixed habit.

Passing from the world of nature to that of man, we find that, although we are usually gifted with the same physical organs and general appearance, that such are capable of infinite variety when looked at from different standpoints. In portraiture the object should be to truthfully and kindly represent the sitter's best aspect. We have in this to struggle against preconceived prejudices, as people always think they know for themselves what the old woman called her "congregation side," and it is well occasionally to see ourselves with others' eyes. Once in a portrait gallery I heard a lady say, looking at her proof, "I don't like it at all, but it looks just like me." Another time the photographer said to me, "There's Mr. A.— has been here four times this week to sit, and yet he is not satisfied." Do we all know our best side? Every portrait photographer who properly knows his business, understands that the first grand requisite of success is to make the sitter feel at ease under far different circumstances from his usual ones. It would be well if this was more carefully considered and made a more striking feature in our studios, but it draws heavily on one's nerve force, and necessitates more of a strain than most operators are willing to endure, unless really in love with their work, which the majority are not. I have had occasion to see a good deal of the inside of a professional studio, and a day's observation of the different sitters gives an entertaining study of human nature. I have often thought it would pay to have a regular adviser, or art director, in the studio to advise sitters—men and women; for one is no wiser than the other, what to wear and how to wear it to obtain an effective picture. If the operator attempts this, he too often meets a sharp rebuff. The amateur, if he be willing to use time and patience, has often a great advantage over the professional in respect to this question of being at ease, as his work is done usually amid familiar surroundings. I undertook once to photograph an old artist friend, who would not assume any but the stiffest possible pose of the shoulders, until I placed a palette and brushes in his hand, when his whole attitude became at once perfectly easy, because natural. Figure studies, to one who has a taste for them, are the most fascinating, and, at the same time, most trying and difficult branch of photography. There is always something to learn in it, and its difficulty is, to me, its greatest charm. What is easy presents no attractions.

Every worker is more or less influenced by others; therefore he best utilizes his own efforts, and in his turn exerts influence, by joining, as before suggested, a photographic society. The ideal one has yet to be invented or evolved, as the tribes of men increase in not merely technical knowledge, but common sense. As at present constituted, they form, in the main, excellent schools as regards practice for those workers already somewhat proficient, but should do more for the beginner than is the case. As managed here and in America, they vary greatly, and each might gain by adopting some of the others' methods. I differ from my compatriot, Dr. Mitchell, in his advocacy of the club system, believing in the work as a mental education, not as a mental recreation. One point generally lost sight of in such organizations, as

soon as they become prosperous, is the great law of majorities—the greatest good of the greatest number. Few human beings are capable of self-abnegation under such circumstances, dan when they are it is often to meet criticism, if not opposition, on the part of those less disinterested than themselves. The true worker, should, however, like the Alpine climber on the glacier, be so busy in cutting steps for his feet that he cannot watch the progress of others, but must attend to his own. When comparative success is gained, then comes the danger common to success, believing the summit has been reached, than which there is no more fatal delusion. It is possible, in tracing out the various by-paths of photography, to make the pursuit in large measure a liberal education, and the widest culture can be used advantageously. I believe in a sound technical training in optics, chemistry and mechanics, an elementary, if no more, art training, and a wide training of the best general literature. Here is where so many photographers—more professionals, perhaps, than amateurs—fail to realize the importance of cultivated intelligence in what claims, and rightly so, to be ranked among the fine arts. One should also make a point of keeping in touch with all that is being said and done through the various photographic journals in different countries, not work on blindly in one's own little special pathway.

If the object of photography is to educate, that means liberalize, and for this a thousand ways are opened through literature, science and art. Decrying the increase of illustrations by photography as injuring wood engraving, for instance, is like the rebellion of handwork against machinery. The world does move if people will act as did some Indians once on the American prairies who attempted to stop a train by holding a long leather lariat across the track. The Indians suffered, not the train. Photography is a most important adjunct in nearly all mental studies, and will become more so as its facilities for work increase. Let each one, therefore, follow out his or her own salvation, grateful for criticism or praise, whichever best aids in keeping high the standard already indicated. Lenses, cameras, instruments of all kinds are only means to an end ; discussions upon them and upon methods of work are only valuable as they conduce to the further elevation of photography itself.

I feel strongly on this subject, believing firmly that photography can be of such incalculable benefit to all who pursue it with singleness of purpose, or with a desire to help others. In this connection let me heartily indorse and offer hearty co-operation to the affiliation scheme recently proposed by the Cheltenham Society. It is a move in the right direction, and deserves the indorsement of similar organizations, wherever located. While not criticising those who look at the object of photography from a different standpoint than my own, I merely placed myself on record as regarding photography in the light of a vital, educational force ; a responsibility and not a plaything ; a power which can be used in so many ways when seriously considered that I cannot but feel it a privilege to be numbered among its adherents. Time and conscience prevent my wearying you with a longer paper, and yet I feel the subject has been very inadequately treated, my only consolation being that, in presenting it to you, I am enabled to emphasize my strong interest in the work to which my time and energies are devoted.

Catharine Weed Barnes.

AN AQUATIC QUESTION.

All photographic formulas direct to take so many grains or ounces of certain chemicals C. P., either granulated or in crystals and so many ounces of water. Now there are many kinds of waters, and the one meant in the formula is, I suppose, also, the C. P., that, is, distilled water.

Distilled water is not everywhere obtainable, and would be too expensive in using not only for compounding developers, but also in washing plates, etc. Thousands of amateurs and of professional photographers have to use the running water at command, whatever its source, and not being chemical experts, will throw the blame for their failures on the innocent plate-maker or on the otherwise reliable dealer in chemicals, while in fact the difficulty lay in want of C. P. water.

The eminent scientists of THE PHOTOGRAPHIC TIMES would reap a vote of thanks from untold numbers of amateur photographers for enlightning us by simplest means :

Firstly, how to ascertain the quality and impurity of our waters.

Secondly, how to purify it and make it serviceable for ordinary photographic use.

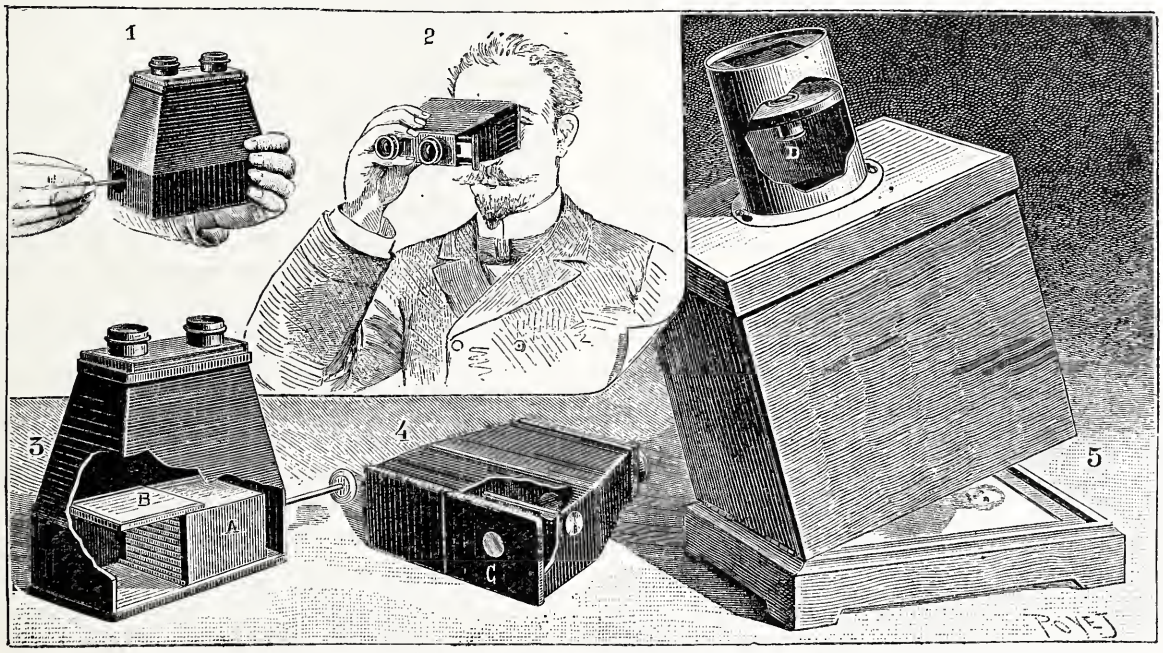
K. KLAUSER.

P. S.—After writing the above I found that my first question is answered partly in the appendix to "The Annual" under the head of "Impurities in Photo Chemicals" which gives the tests for impurities, but not the remedies for the non-chemists, such as probably nine-tenths of amateurs are.

THE OPERA-GLASS PHOTOGRAPH.

The photographic apparatus of to-day are legion and every day they undergo new modifications It is very difficult for one to make a choice, for every maker constructs instruments for special purposes, and we believe there is no universal apparatus. The old style of combining the conditions of long distance, focusing, decentring, etc. The magazine instrument holding all the material in a square box, and finally the pocket camera, which is either one or the other of the two forms of the reduced size. All these arrangements have their special use and are utilized according to the time and place where they will be used. Another idea of the makers has been to conceal the apparatus in such a way so as to secure a negative secretly. That is chiefly interesting to artists who desire to get the true attitude of persons. Then some instruments take almost microscopic images, but there is nothing very complete upon the subject. M. J. Carpentier, a Frenchman, and skilful electric engineer, who is also a distinguished amateur photographer, during his spare time has tried to solve this problem, and it seems to us he has succeeded by obtaining a negative of a size of $1\frac{3}{4}$ x $2\frac{1}{2}$ inches, that can easily be enlarged to 5 x 7 inches by means of a special instrument simple in operation. This photographic apparatus has the form of an opera glass (No. 1 in the cut); it can be carried when going out like a field glass, by a strap over the shoulder, or put in the pocket. It contains twelve glasses that can be changed automatically. To operate it, it is held before the eyes like an opera glass (No. 2) and so far as any one knows he seems to be viewing the scenery rather than making a negative.

The apparatus is furnished with two objectives; one for securing the image upon the negative, having all the properties of a good photograph objective; the other, of the same focus, serves to view the objects. The image that it gives is received upon ground-glass, and a hole C. (No. 4) made in the rear of the apparatus permits its being seen. This hole is provided with a red glass, which gives a monochrome image, a happy arrangement, as it allows the taking of a more definite negative.



OPERA GLASS CAMERA (Nos. 1, 2, 3 AND 4,) AND ENLARGING APPARATUS FOR PROOFS (No. 5).

When one looks into an ordinary dark chamber the image has all its colors, and one runs the risk of being deceived as to the relative value of the different tones which will be reproduced by the photographic negative in a single color; it is to be understood that they avoid falling into this error if they look at the image with a glass having but one color. We recommend this process, which is very easy to put into practice, and that is, moreover, already used in some tubes that can be adapted to any kind of chamber.

But to return to the opera glass. Back of the two objectives a metal plate slides, having an opening; it is a screen with a simple drop shutter.

It is arranged in such a way that it can be set without uncovering the sensitized plate, it is therefore useless to have a cap over the objective; besides, it does not allow a sight of the image on

the finding side when it is set, a second useful precaution, so they will not forget to set it at the moment of operating. The sensitized plates are held in a small independent frame of metal, and are piled one upon the other in a drawer at the rear of the apparatus A (No. 3). The first plate receives an impression as soon as the shutter is unlocked by pressing a button placed between the two objectives. To replace the plate that receives the impression by another, a button is pulled that is placed upon the side of the instrument, and also displaces the drawer A (Nos. 1 and 3). By this motion the first glass, B, remains in place held by its edge; then, when the drawer is completely drawn, it falls to the bottom and is found at the back of a package when the drawer is pushed into its normal place. The glass that is found on top is then ready to receive the impression.

We mention that in the movement made the plates are brought in face of the obturator of the viewing glass, but that is not inconvenient at this time, as the obturator is not set. Moreover, in this movement each frame has a number upon the back, this number is shown in the red glass, C (No. 4), so that the number of frames remaining can be seen. Nothing is simpler, as can be seen, than to secure a series of negatives with this apparatus and without being noticed. Their size makes them valuable documents; but with the enlarging frame of Mr. Carpentier it is very easy to increase the size to (5 x 7). The enlarging apparatus (No. 5) is composed of a square box with a hinged bottom holding a frame where a sheet of paper sensitized with gelatino-bromide can be placed.

This work, be it understood, is done in the laboratory. The top of this box is furnished with a cylinder whose extremity has a place to receive the little negative. An objective, D, is unchangeable; it reproduces the enlarged and positive image upon the sensitized paper; to do this it is sufficient to go out of the laboratory and expose the apparatus a moment, either to a diffused, or to an artificial light. It is not necessary to put in a plate, nor to focus; all is regulated in advance. They can take a series of plates very rapidly, or many proofs of the same negative. There is nothing to be done afterwards, but to develop and fix them by the ordinary process.

We have so far only described the instantaneous process; but it can be used for posing. For this purpose a special arrangement is used, occupying a very small space, it consists of a foot upon which the opera-glass is set. They operate them either by using a cap, or with a small shutter obturator, that is attached to the end of the objective, the operator can obtain good results.

The apparatus, as can be seen, of Mr. Carpentier is complete, and that it answers the purpose for which it is intended; an apparatus occupying but a small space and securing a photographic negative without attracting attention and an enlarged positive proof.

A. C. Knapp.

FROM THE PRAXIS OF STELLAR PHOTOGRAPHY.

[Written for the "American Annual of Photography and Photographic Times Almanac for 1893," but received too late for publication in that volume.]

1. *The Objectives.*—I have described in "The American Annual of photography" for 1892 how ordinary photographic objectives may be profitably employed in astronomical photography. Very large portrait objectives of from 5 to 6 inches in diameter made many years ago, mainly in France, but now discarded by the portraitist in favor of Steinheil aplanates of but 2 inches in diametor, are of great power for some sorts of astronomical work and may be obtained for very low prices at that. On account of their enormous luminous force they have found employment for several astronomical purposes. They being for example to reproduce photographically and with marvellous distinctness nebulæ and the trains of comets. Their actual and useful picture-surface is, however, but small—2 B. Of objectives of 6″ anterior and 7″ posterior lens diameter a plane of but 13 x 18 c. m. becomes useful at the most, nevertheless is the comparatively small but even surface well covered by the superior light force. I use two of these mammouth objectives of 5 and respectively 6 inches, and of 6 and respectively 7 inches diameter, the anterior being in all cases the smaller of the two.

I have also had quite interesting experience with small lenses of modern construction, made by renowned opticians. Once I was about to focus Jupiter microscopically (I always do that) with one of these instruments, the image of the planet appeared extremely sharp, even the Zones were visible distinctly. With another objective of similar kind I did not succeed so well, the image being blurred and appearing sometimes of red color, at other times bluish or greenish, till I resorted to photographic means to secure sharp focus, and found, finally, the same objective to be capable to make still better pictures than that beautiful one

of Jupiter projected on the ground-glass by the other.

Fixed stars come but very small, they are exceedingly sharp, however, their magnitude can be scarcely detected, those of the third not being visibly distinguished from stars of the sixth magnitude. Plates of this description are well adapted for the making of measurements.

With the other objective even the very smallest stars were perfectly sharp, the larger of discal shape, and their proportionate magnitude distinctly discernible. Such plates may serve well for the determination of magnitudes.

For terrestrical work both instruments were equally valuable.

2. *The Plate.*—I have used for years nothing but Schleusser's plate of highest sensitiveness, not fresh or direct from the manufacturer, but when from four to six months old. At that time they attain to highest sensitiveness. When plates begin to fog around their edges, they are in the best state for rapid work. I cut off the foggy edge and reduced a 13 x 18 plate to an extremely useful 9 x 12. Orthochromatic plates of the same maker, and over one year old, have given excellent results without chemical fog or such produced frequently by the color-sensitive substance.

3. *Developer.*—Pyro soda has not yet been superceeded in my laboratory, for it answers best for all my purposes when freshly prepared for every individual plate. For very fine nebulæ the developing solution is very much diluted, the process carried on for a long time when the finest details possible are successfully brought out.

4. *How to label the plates* has been described by me in "American Annual of Photography" for 1891. But when it becomes desirable to mark single stars, or individual spectrum lines, I coat the glass side of the plate with zapon varnish (crystalline). Its very fine and delicate film can be well inscribed upon with a fine steel needle. When the varnish is perfectly dry, I superpose a star negative 2 B, film-side down, upon a corresponding star chart, and when the respective objects are found mark them either with numbers or with the letters of the Greek alphabet.

The characters can be made very small and sufficiently fine. Should it be desired to remove them, it can be easily done by wiping off the varnish.

Eugene von Gotthardt.

SOMEWHAT DISTORTED.

"I suppose that's a photograph of one of those grotesque masks I see on friezes."

"Oh, no; it's a photograph of young Waxem after smoking his first cigar!"

EXPOSURES AND EXPERIMENTERS.

[Written for the "American Annual of Photography and Photographic Times Almanac" for 1893, but received too late for publication in that volume.]

One of the most difficult tasks of the photographer is to determine upon correct time of exposure. With our present knowledge we are enabled to correct over-exposures by appropriately modified developers, it is true, but restraining the action must remain within certain limits, which to overstep can result but disastrously. A correctly exposed plate has all possible advantages over one abnormally exposed, developing proceeds regularly and we need not to resort to all sorts of tricks to squeeze a picture out of the plate.

The difficulty to expose correctly is acknowledged by every one, the most experienced men make errors, the whole proceeding remains guesswork, and when an exposure is made correctly it is but a lucky hit after all, if the exposure is as it should be. To facilitate the matter, ingeniously constructed instruments, exposure meters, have been invented to aid in our work and to secure better success more uniformly. One of the best of these meters is doubtless "The Goerz," when we judge by its enormous popularity among *dilettanti*, but we cannot say it is reliable enough to serve its purpose in all cases. Let us remember, the many factors becoming active when a photograph is made. Time of day or season of the year, state of atmosphere, locality and color of the subject, diameter of stop, sensitiveness of the plate, and others. All these factors must be equally considered to do justice to what the exposure meter claims to be able to do, but how easily may errors be made, or mistakes occur when, what is by no means rare, the operator is embarrassed or becomes excited in the moment when exposure is to be made.

To determine correctly upon the proper time of exposure, and least so by the aid of artificial auxiliaries, is an utter impossibility.

The artist sees the effect of his mixing colors, when they are applied to the canvas, the *chef culinaire* after adding spices to his *ragoût*, judges of its picquancy by tasting it, the photographer admires or condemns his work after the plate is developed, but by no means can he be assured of ultimate success by previous calculations. The time of exposure should be determined upon without any or either of the many auxiliaries existent. Power of objective, sensitiveness of plate, and their proportionate relations to the image reflected upon the focusing screen are the only reliable indications of how to expose. Nicely and laboriously

constructed instruments and complicated arithmetical calculations can never solve the problem. The total impression received upon the eye of an experienced operator is of much greater value and importance to final success than any of these artificial means can secure.

True enough, a long experience is required to judge correctly from the image on the ground-glass, and many errors are constantly being made, but when accustomed to the methods less errors will be made than when one solely relies upon the exposure meter; with it he will constantly grope in the dark, without it he will err as much. Close and careful observations of cause and effect are the only means to expose correctly. *Charles Scolik.*

Notes and News.

Frank L. Codman, son of the late C. H. Codman, of Boston, and Miss Susie Lincoln Tirrell, will be married Wednesday evening, December 7th, at eight o'clock, in the Church of Our Father, Meriden Street, East Boston.

The engagement is announced of Miss Catharine Weed Barnes to Mr. Henry Snowden Ward, of London. Mr. Ward is an editor and writer of recognized ability, and greatly interested in photographic work. It is understood that Miss Barnes retains the editorship of the *American Amateur Photographer* and does not relinquish her literary or photographic labors.

Dr. Andresen's latest developer, Amidol, promises to supersede all his other developers. It commends itself both to professionals and amateurs, and is carrying everything before it, if the orders received by Messrs. Scovill & Adams Co., trade agents for the article in this country, is an indication.

Amidol.—The following formula comes very highly recommended. Its action is very energetic and the negative produced is of a good black color :

Dr. Andresen's amidol	7 grains
Sodic sulphite	77 grains
Potassic bromide	3 grains
Water	7 ounces

The developer thus mixed is as clear as water and the same solution can be used repeatedly. Lantern slides of excellent quality can be produced with this developer from negatives so dense that under ordinary conditions they would not be chosen for transparency making.

With weak negatives the same result can be brought about by after-intensification with mercury and silver cyanide.—*The Photographic News.*

THE AMIDOL DEVELOPER.

A few experiments conducted with this new developing agent demonstrates that it is to have an important place in the many developing chemicals now before the public, and to possess some peculiarities that may identify it with the wet-plate developer,

A sample ounce of the chemical was sent to me from England. I found it to resemble somewhat hydroquinone crystals in shape, but darker, similar to the color of steel. The directions sent with the package explained that it was advisable to dissolve the sodium sulphite first, then the amidol. Accordingly the following proportions were carried out:

Water	8 ounces.
Sodium sulphite (crystals)	800 grains.
Amidol	80 grains.

The water used was from an artesian well. The above forms the stock solution, and is too powerful ordinarily. It must be diluted by three times its bulk with water. Half an ounce of the above is added to one and a half ounces of water to form a nominal developer. When freshly mixed it is colorless, like water, and gradually becomes yellow, and later a dark yellow. The first batch of stock solution that was mixed became milky and turbid after an hour, and in the course of five hours quite a precipitate settled at the bottom of the graduate, which was dried on blotting-paper and had the color of steel. This precipitate did not seem to weaken the developing power of the developer; but it was not what one would expect. I am convinced it must have been due to the water, which probably contained some lime. However the developer mixed as described was poured over an 11 x 14 sheet of Eastman's slow bromide paper, which had been liberally exposed to daylight behind a cardboard drawing, and to the astonishment of all, developed up in about five seconds to full density. The blacks were of a delicate, velvety color, while the whites were remarkably clear and free from any sort of a veil or stain. Sheet ofter sheet was rapidly developed in the same solution (eight ounces) until the eighth or ninth, when it began to work slower and the blacks were not as brilliant. But a dozen good bromide prints of 11 x 14 were obtained with only twenty grains of amidol. It apparently made no difference whether a long or short exposure had been given; the development began as rapidly and acted uniformly on every portion of the film that had been exposed to the light.

Desiring to secure, if possible, a solution that would show no preciptate, a second batch of the stock solution was prepared as above with the exception that distilled water was substituted for the artesian well water. An absolutely colorless solution was the result. There was precipitate, and after standing in a graduate covered by a sheet of glass for twenty-four hours, the color became a faint yellow, which became slightly deeper in two or three days. The experiment showed conclusively that rain or distilled water should be used. With six grains of amidol in this distilled-water developer, I developed in a short time one dozen 3¼ x 4 films, one after the other (time and shutter exposures), and obtained very clear negatives, even though in some cases the film was in the developer for twenty minutes. I next tried a fresh solution, of similar strength to the foregoing, on two Cramer isochromatic rapid plates, having had quick shutter exposures. After pouring on the developer, the image rapidly appeared in three or four seconds, and in three minutes the negative had reached ample density and was done A second plate came up nearly as rapid; both were excellent, clear negatives. The solution, after development, was saved. It was clear (with the exception of particles of film that had become detached during

development), and was used the next day in developing half a dozen 4 x 5 bromide prints.

The marked difference amidol has over other developing agents is that it is quite soluble in cold water, can only be used with neutral sodium sulphite, in place of an alkali, and refuses to develop in an alkaline solution.

It is distinctly an acid-developing agent, and when rightly understood will be a great help in the production of line negatives and lantern slides. To test the developing power of amidol by itself, a solution was made by dissolving twenty grains in four ounces of water. This was poured on by a properly timed plate and kept on for over five minutes. In that time no trace of an image appeared. Next ten grains of carbonate of potash were added, and the development continued for three or four minutes more, but still no sign of an image appeared. The potash turned the solution from a colorless one to a deep, handsome red. Having no sulphite of soda at hand, the experiment was not carried further.

At another time a separate solution of chemically pure neutral sodium sulphite in distilled water was made (strength 100 grains to the ounce), also a separate solution of amidol (twenty grains to two ounces of distilled water, equivalent to ten grains to the ounce). One-half of the amidol was taken (one ounce), to which was added half an ounce of distilled water. The ounce and a half pure amidol developer was then poured over a shutter-exposed ischromatic plate; after five minutes no trace of an image appeared. Testing the solution with blue litmus paper showed that it was acid. Next the experiment of adding to this apparently inert developer, a drachm at a time, and by half drachms, the sodium sulphite solution mentioned above, was undertaken. First a drachm was added after three minutes; there was no sign of an image. Then two half drachms went in; soon the image began to appear—developed out slowly, similar to plates in eikonogen weak in an alkali. The negative had good density and was finished in six or eight minutes. The solution was now tested with blue litmus paper and showed an acid reaction, though not as strong as before the sulphite was added. Thus it was found that twenty-five grains of sodium sulphite to seven grains of amidol are necessary to set up a developing action, and that the addition of so much more (100 grains of sulphite to ten of amidol, as given in the formula) accounts for the rapidity with which a slightly diluted solution of that kind acts. The sodium sulphite may be regarded as the accelerator in the amidol developer—the same as the alkali carbonate of potash or ammonia is in the eiko or pyro developer. With the ounce and three-quarters of solution five 4 x 5 and two lantern slide plates were developed, all being of extreme brilliancy and clearness; the high-lights of the slides were clear glass. The color of the developer was light yellow. On testing the standard solution (100 grains of sulphite to 10 of amidol) with blue litmus paper there was apparently no change, showing, we think, that it requires that amount of sulphite to counterbalance the acidity of the amidol.

The other portion of the plain amidol solution changed very soon—in three-quarters of an hour—from being colorless to a deep red, but kept clear. At this writing it has not been tested as to its developing power when compared with a fresh solution, but it is likely that it will be as effective.

Amidol is very nearly as soluble in distilled water as pyro; hence it may be advisable to keep it in its crystal state until ready to use, then to mix up a small quantity and add gradually enough sodium sulphite (which may be kept in a stock solution) to produce a developing action. By varying the proportions of the two, rapidity of development is to be regulated as well as the density of the image, while the tendency of the developer to veil the unacted-upon portions of the film, during prolonged development, is reduced to a minimum, and whether over-timed or under-timed, plates will come out clear and briliant. No bromide need be added if the proportion of sodium sulphite is lessened.

It will seem strange to many to consider sulphite as an accelerator in this developer, when heretofore it has been regarded as a retarder; but when its action has been so clearly demonstrated, as outlined in the foregoing described experiments, there is no doubt about its function. Besides being an accelerator it also serves to retard the supposed oxidation of the amidol.—*F. C. Beach in The American Amateur Photographer.*

ONE HUNDRED DOLLARS IN GOLD TO BE PAID IN PRIZES FOR PHOTOGRAPHS OF BAD ROADS.

To stimulate the collection of Photographs to be used in showing the need of improved roads in the United States, I offer three prizes, aggregating $100 in gold, as follows:

1. One prize of $50 (gold) for the best collection of not less than three photographs.

2. One prize of $30 (gold) for the second best collection of not less than three photographs.

3. One prize of $20 (gold) for the third best collection of not less than three photographs.

This offer is made subject to the following conditions and suggestions which should be observed:

All photographs must be accompanied by the negatives, unless the latter have been destroyed.

Competition will close on the first day of July, 1893, and all photographs must be submitted on or before that date.

Photographs must be confined to such subjects as most strongly illustrate the unfitness of the present public roads (especially the common "dirt" roads) used as public highways.

To aid you by a suggestion, I would recommend the following as good subjects for competitive pictures:

Photographs showing the common spectacle of the farmer's team and wagon, hub-deep and knee-deep in the muddy road.

Photographs showing rough, rutty and muddy roads in their worst condition.

"Stuck in the mud" photographs, showing the farmer or merchant with his loaded wagon vainly trying to drive his patient team and load out of the inevitable mud hole.

Photographs showing the everyday breakdown caused by rough or muddy roads or steep grades.

Photographs showing smooth, hard-surfaced roads and (if possible) teams hauling loads over the same.

And other pictures illustrating the goodness of good roads and the badness of bad roads. Your opportunities and observation will suggest the proper thing in this line.

Each photograph must be accompanied by a full statement of particulars, giving date, location, etc., by which the picture may be identified. Blanks for this purpose will be supplied on application.

All photographs and negatives submitted must be sent marked with a fictitious name or pseudonym, by which the competitor is to be known until the date of award. Each competitor must also send a sealed envelope containing his or her real name and address, and marked upon the outside with the fictitious name of the competitor.

All photographs and negatives submitted in this competition are to remain the permanent property of the League of American Wheelmen. At least ten persons must compete in order to insure the reward here offered.

In deciding upon the respective merits of the work submitted, the following points will be considered:

1. The subject of the photograph and its force in illustrating the necessity for better roads.

2. Clearness and general excellence of photographic work.

3. Location (giving preference to those views which show bad roads in important counties, suburbs of large towns, etc.).

4. Size of photograph. The question of size will be considered least and last of all. Any competitor may send more than three photographs if desired. The committee will select the *three best* of those submitted by each competitor.

The prizes will be awarded before July 15, 1893, by a committee to be selected by the Executive Committee of the League of American Wheelmen. All communications will be in every respect confidentially treated, and further information will be furnished on application to the undersigned, to whom all photographs and negatives should be sent.

Isaac B. Potter, Manager,
Potter Building, New York City.

The Editorial Table.

We have received from G. W. Norris six very pretty 5 x 7 photographs of animal subjects. Their titles are: "A Guernsey," an excellent portrait of a blooded cow of this strain; "Mid-day Rest," a very pretty group of cattle in a field under some trees; "The Pasture Field," another pretty group of cattle, including one or two horses; "Irish Setters," and "A View of the Susquehanna" and "An Ideal Head," which is an excellent horse portrait.

They say that the wild Buffalo has practically disappeared from our Western Plains, but A. D. Miller, of Kalispell, Mont., has succeeded in finding and photographing a large herd near the foot of Flathead Lake. "If I had not had some experience with wild cattle on the range in Wyoming, where at one time I photographed a bunch of cattle that had 10,500 in it, and at another time a band of sheep of 50,500 head, I should have never got as good a picture as I did of the wild Buffaloes. It takes some experience and a little pluck to set up a camera in front of a group of this kind, I can assure you." The other picture which Mr. Miller sends, is of a group of Indians taken in the city of Kalispell, and is very interesting indeed. "The Indians are the remnants of the once powerful Kootnus tribe." This was once a very powerful tribe, continues Mr. Miller, but disease and warfare have so reduced them that now there remains but a mere handful. They live on the Flathead reservation only a few miles from Kalispell.

THE REFINEMENT OF CRUELTY.

"JUST read the poem on the back of this photograph some one sent me."

"Whose likeness is it? Why, you've pasted a thick sheet of paper over the picture, Miss Lordly."

"I know it, but it's a likeness of that ugly Mr. Jones, and I don't want the beaty of his verses marred by exposing his face to view!"

Queries and Answers.

383 L. L.—What is meant by American cloth, frequently mentioned by English writers on photography?

383 *Answer.*—It is nothing but rubber cloth. If we mistake not Mr. Burton was the first to give it this euphoneous name. The focusing cloths sold by The Scovill & Adams Co. were named by him thus.

384 HELOISE.—What are the distinguishing features of the new developer, "amidol?"

384 *Answer.*—Absolute clearness and intensity of the negative, and for that reason amidol is an excellent developer for lantern slides. On applying the solution to the plate the image springs up immediately, and if the exposure has been correct, gains in intensity speedily and with more rapidity than with any other of the newer developers. Over-exposures are controlled with bromide of potassium, but restrainers should be used cautiously with amidol, as intensity will build up with it almost under any circumstances.

385 CLAUDIA N. desires to make instantaneously exposed pictures, but cannot afford the high price of a Prosch triplex shutter. What other, cheaper shutters, are in the market? she asks.

385 *Answer.*—If we mistake not you work with a Waterbury B. lens. If so send your lens to The Scovill & Adams Co. and have an Elite shutter attached to it, which costs but $3.50, and if not, get a Kazoo, also a cheap, convenient and effective appliance.

386 G. F., of Connecticut.—Will you kindly give us a good formula for developing kallitype paper known as No. 2?

386 *Answer.*—The developer accompanying the original formula is good enough, but the amount of potassium bichromate is excessive. When using but $\frac{1}{10}$ or $\frac{1}{8}$ of a grain to 10 ounces of the solution, it is certainly strong enough. Potassium bichromate is a very powerful restrainer in developing the No. 2 paper, too much of it destroys all half-tones, making the print harsh and chalky, and consequently lengthens the time of exposure very much. The density of the negative is immaterial in kallitype printing, and provided the exposure has been long enough with a very intense matrix, and the developer has been modified accordingly, equally good results may be obtained.

387 MARTHA N.—What is Mignon paper? I have seen some very beautiful prints, made on paper by that name.

387 *Answer.*—Mignon paper is a chloride of silver gelatine emulsion, matt-surface, printing-out paper. For particulars, see "The American Annual of Photography for 1891."

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

HERE IS A SAMPLE.

RAHWAY, Nov. 23, 1892.

Dear Sirs: THE TIMES is a great advertising agent. On the first appearance of my ad. (which please take out, as I now have a man), I was flooded with applications—some accompanied by samples—and I should judge they were from the best kind of help.

With best wishes, I am,

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A Plain Paper for Aristotype Coating will shortly be upon the American market, which can thoroughly be relied upon. It will be prepared ready for receiving the Aristotype coating, and will be guaranteed to be uniform and entirely reliable in every respect. It will be worth the while of Aristotype paper manufacturers to look into this matter.

The Latest in the Cameras is the Pocketbook Camera, which is something entirely new and very attractive. It is just the thing for the holidays, and will undoubtedly have a large sale.

This camera is not a toy, but a real camera, with a good lens, capable of making pictures two inches square. The photographic apparatus, when packed, goes in one section of a new Russia leather pocketbook of the ordinary ladies' size; and, when not in use for photographing, the pocketbook can be used as an ordinary purse, the place where the camera is packed being an extra place for silver and coins, and other places being provided for bills, cards, etc.

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Nineteenth.—Because it is not an experiment, having reached its 22d year.

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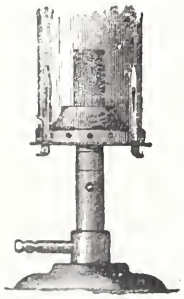
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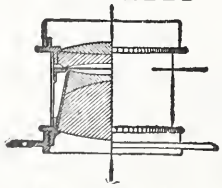
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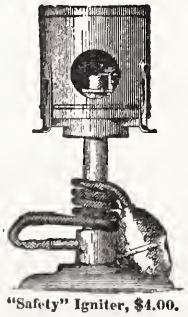
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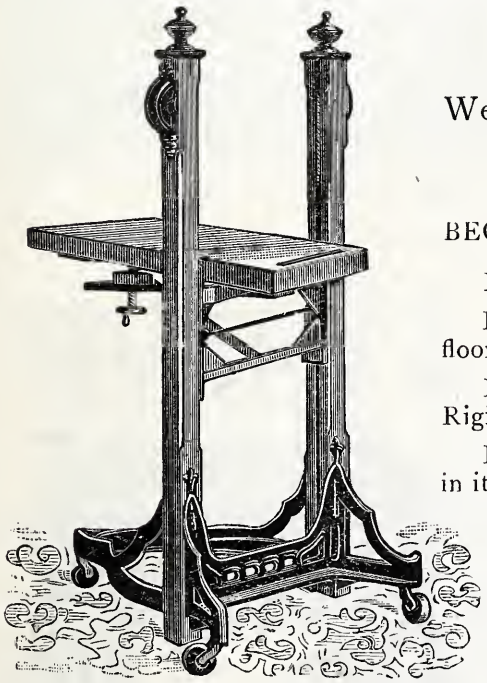
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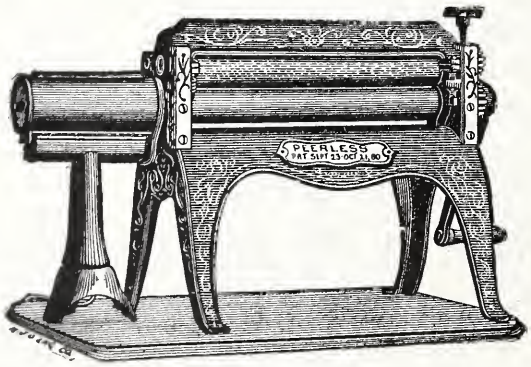
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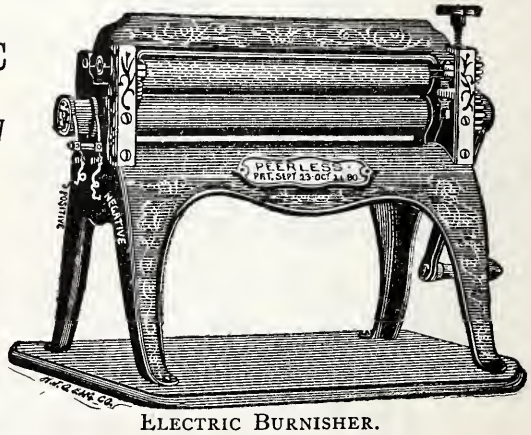
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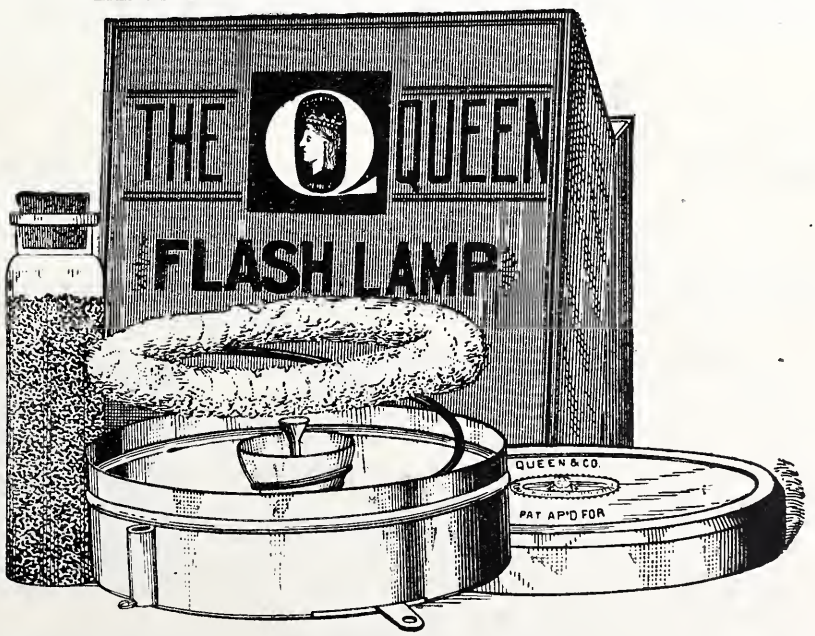
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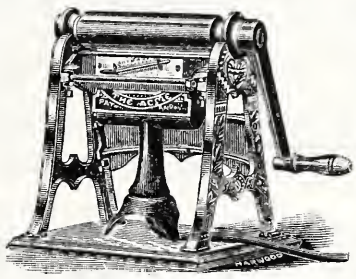
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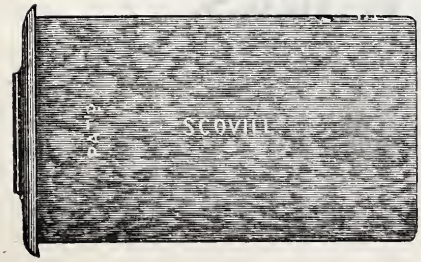
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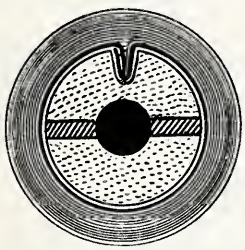
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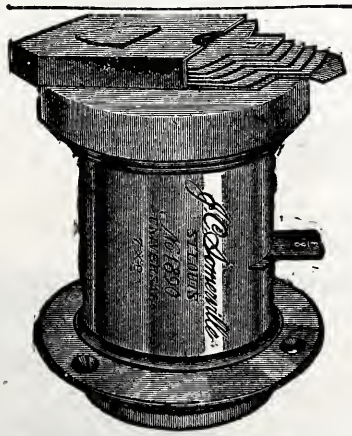
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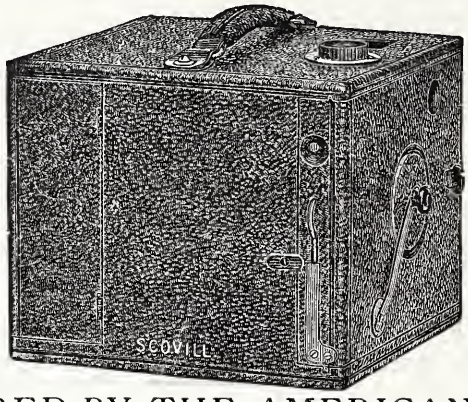
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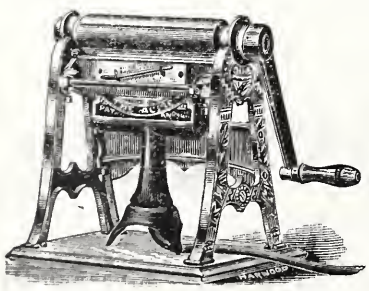
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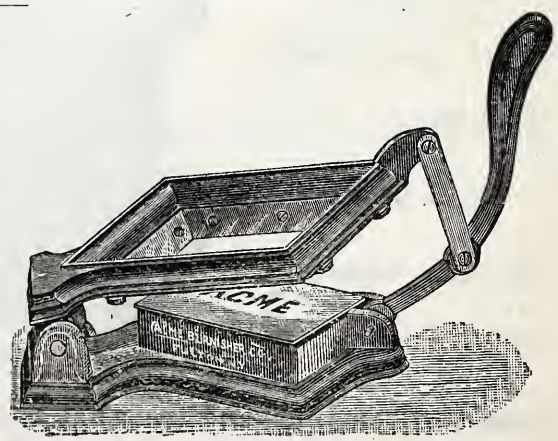
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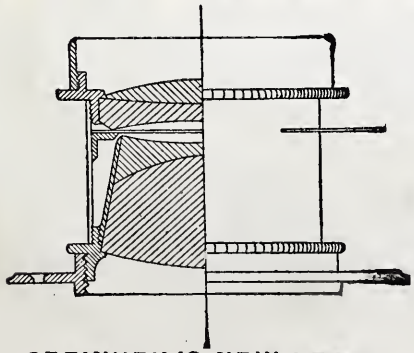
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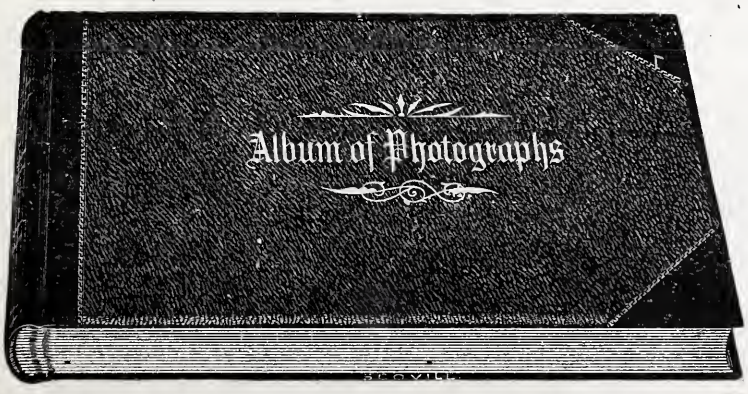
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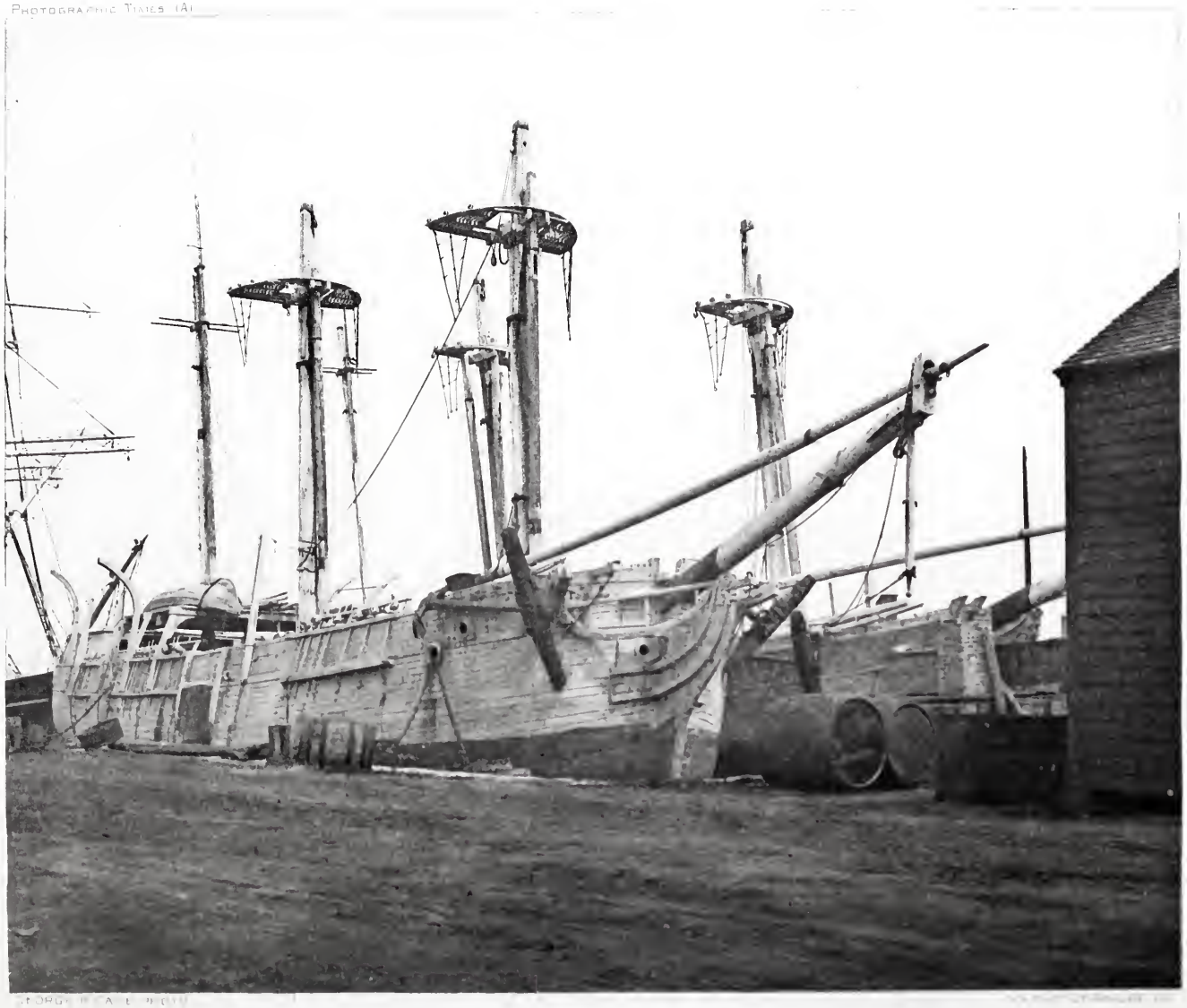
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GEORGE SCALE PHOTO

THE PHOTOGRAPHIC TIMES.

VOL. XXII. DECEMBER 9, 1892. No. 586.

AN OLD WHALER.

On sluggish, lonesome, muddy waters, anchored near the shore,
An old, dismasted, gray, and battered ship, disabled, done, and broken,
After free voyages to all the seas of earth, hauled up at last and hawser'd tight,
Lies rusting, mouldering.

WALT WHITMAN.

We present our readers this week with a photogravure of a most interesting subject, by George B. Case, of New Bedford. The picture shows probably the oldest whaler in the United States, being the "Rousseau," built in 1801, and now lying dismantled, as shown, at a New Bedford wharf.

The negative was make on a Carbutt Eclipse plate, with a Dallmeyer lens, instantaneous exposure being given, and the plate developed with para-amidophenol, after THE PHOTOGRAPHIC TIMES formula.

Mr. Case sends us the following interesting matter in regard to the "Rousseau."

"The oldest vessels in the world to-day are the 'Rousseau' and 'True Love;' the former now lies at the wharf at the foot of North street. Her history is very interesting. She was built for Stephen Girard, of Philadelphia, by Nicholas Vandusen, and was launched from the yard of the Vandusens, near Shakamaxon street, on the Delaware, in 1801. She is 95 feet lang, 28 feet broad, and 18 feet deep, and registers 305 tons. Her rig was that of a full rigged ship, and at the time of her building she was considered a fair sized vessel for those times. After doing service for Mr. Girard for several years, her rig was changed, and she was regarded as one of the fastest barks sailing from Philadelphia. About a year after the death of Girard, in the latter part of 1831, she was purchased by the late George Howland, of this city, who was extensively engaged in the whale fishery in the early part of this century. When the 'Rouseau' arrived at this port she had open bulwarks forward of the mainmast, carrying on either side a spare spar, which lay in stout iron crutches and which afforded the only protection from the waves forward of that mast. Abaft the mainmast the deck was raised a few inches. She was immediately fitted for whaling, bulwarks being put in forward, and when she sailed on her maiden whaling voyage was in command of Capt. Walter Hillman, of Martha's Vineyard, and it may be added, the voyage was a good one. Later a new deck was laid and it was made flush. She was a well built ship, constructed of live oak top entire, with white oak bottom, and when her bottom was replanked some ten years ago, her floor timbers were as firmly on her keel as when built. After the death of George Howland, the vessel was continued in the whaling business by his sons, George and Matthew Howland. She made numerous good voyages, and about seven years ago she was sold to her present owners, Aiken & Swift. She arrived in port from her last voyage April 8, 1886, with thirteen hundred and sixty barrels of sperm and one hundred and eighty barrels of whale oil."

DR. ANDRESEN'S AMIDOL.

THIS, the latest developing agent presented to photographers by the learned Dr. M. Andresen, appears to be making its way, not only on the continent of Europe and in England, where it was first introduced, but also in the United States, where it was brought forth more recently.

As in the case of other new developers, rather extravagant claims were made for it when it was proposed, and one was justified in reserving one's judgment until one had personally tested the new claimant for popularity. I may now say, however, after using it to some extent in my practical work, that I believe it will justify all the claims which have been put forth in its behalf.

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What appeared to be some disadvantages on the superficial testing, are shown to be really no disadvantages at all, on a more careful examination of the substance. For instance, it stained the fingers to some extent when handled in the crystalline form in which it comes to us, and one was naturally led to suppose that, like pyro, it would stain the fingers and the plate in development, whereas *the reverse is exactly the case.* When in solution it does not stain the hands, and it produces negatives which are distinguished by their peculiar clearness and brilliancy. In this respect, its negatives resemble more closely the old wet plates than negatives developed by any of the more recently proposed agents.

Then again, it was observed that when the developer was applied to the plate, the image appeared almost immediately, and of rather a faint character, looking almost like an over-exposure; but when the development is continued for a moment or two longer, especially when a slight amount of bromide is added, the intensity of the negative is built up with amidol to an unusual extent, preserving at the same time perfect clearness and brilliancy.

Its simplicity, requiring as it does, no alkali, and working perfectly in one solution, will recommend it to a large number of photographers at once. Thus, all its advantages combine to make it a developer which will undoubtedly have a very wide application in this country, rivalling its forerunners, eikonogen and rodinal, if not surpassing them both, and threatening even old pyro itself, in popularity.

Charles Ehrmann.

REVERSED NEGATIVES.

REVERSED negatives are employed in the photo-industrial processes, in the carbon simple transfer process, etc. Generally they are made by stripping when the negatives are not varnished, but this involves a chance of spoiling them when they are made on gelatine films, specially, or a positive is made, and from it the reversed negative ; this process is complicated. A more simple and expeditious method, one which is seldom employed to our knowledge is that of obtaining a reversed negative from the negative itself. For this purpose two processes may be employed ; both have been devised by A. Poitevin. The first one is the *dusting process*, the other the *amphitype process ;* the latter is little known.

The dusting process is based on this phenomenon that certain saccharine compounds in presence of chromic acid or of a bichromate, lose their hygroscopic property when subjected to the action of light, and, therefore, not capable, then, of retaining a powder thrown upon their surface. As it is seen the theory is quite simple ; the practice is equally so and does not present much difficulties.

It is as follows :

A glass plate is cleaned with care, dusted, immersed into filtered water until wanted for use, which latter prevents the photo compound to divide or be repelled when applied upon it.

Many formulas for the photo compound have been published. We use the following :

Gum arabic, powdered	60
Sugar candy	30
Glucose	20
Ammonium bichromate	40
Water	1000

The gum arabic should be first dissolved in a little hot water, the other ingredients are afterwards added and the solution filtered. It does not keep over forty-eight hours. It is best to use it soon after its preparation.

If the compound is wanted for everyday use, as in ceramic and glass-painting establishments, where it is employed to retain an image in vitrifiable matters, it is advisable to prepare it in two solutions, one containing the gum, the sugar and glucose, the other the bichromate, and to mix the two by equal parts an hour or so before preparing the plates.

When coated and drained, the plate should be rapidly dried on a hot iron plate, or over an alcohol lamp, then, when still quite warm, exposed under a negative heated to about the temperature of the plate.

The exposure time varies with the opacity of the negative, etc. Generally two or three minutes in the sun, from five to eight minutes in the shade are sufficient ; the image should be visible after exposure.

On its removal from the printing frame, the plate is again slightly heated, then dusted with a small quantity of finely powdered graphite, or Indian red, or a mixture of the two, or any other colored matter insoluble in water, passed through a No. 200 sieve.

In cooling the film absorbs water from the air, and in a certain period—say two minutes—it becomes sufficiently damp and adhesive to retain the powder in the parts not acted on by light, and this in proportion to the various degrees of insolation. Therefore, by working the powder on the surface of the film with a soft camel-hair brush the image will gradually develop and assume the proper den-

sity. Proceed slowly. If the powder does not at first take well, wait a few moments, and the dampness of the air being more and more attracted will render the film more adhesive and it will retain the powder in a sufficient quantity to form a good negative.

This process is liable to two causes of failure, both resulting from an improper exposure. If the film is over-exposed, either the image is deficient in contrasts or the powder refuses to adhere. If under-exposed the powder will smear and the film will be daubed all over. There is no remedy in the latter case; in the former the defect might be remedied by allowing the plate to stand aside for five or six minutes, in order that it may absorb more moisture, then developing by brushing over the colored substance, as explained above.

If the operations have been well done, the countertype will exactly reproduce the original negative; it can even be made softer or the contrasts be increased by simply varying the time of exposure, or by the distribution of the powder to that effect during the development.

When the image is developed it is tinged yellow from the bichromate compounded with the film. To eliminate it it suffices to immerse the plate in a solution of alum at 10 per cent. of common alcohol, which insolubilizes the gum and fixes the powder, then to rinse with alcoholized water, and, after allowing the negative to dry, to protect it by a coating of plain collodion :

Pyroxiline	20
Castor oil	5
Ether	480
Alcohol	480

The duplicate negative thus obtained is reversed. If one objects to it, a cliché, one which can be used, reversed or not, can be obtained by transfering it on a collodion film. For that purpose the glass plate is first rubbed with talc, or better, flowed with a thin India-rubber solution which is allowed to dry, then coated with plain collodion, immersed into filtered water until greasiness has disappeared, and finally coated with the sensitive compound, when one proceeds as usual to the coating with the protecting layer of collodion, exclusively. Instead of this the negative is flowed with the following solution of India rubber in benzole :

India-rubber cement, prepared with benzole.	2
Benzole	10

and when this is dry, coated with collodion, which is allowed to dry. It now suffices to cut the edges with a penknife to strip off the whole from the glass plate.

The amphitype process was devised by A. Poitevin (1859) to obtain direct diapositive with the *camera obscura*, but it is evident that by a modification in the manner of operating, which suggests itself, it can be employed for the reproduction by contact of negatives from negatives and positives from positives. It is substantially as follows :

A collodion is prepared with iodide of potassium, but in less quantity than that ordinarily employed for the obtention of negatives. The glass plate being coated, then sensitized as usual and washed, is exposed to direct light for a few seconds; no change is observed. The plate being then well washed to free it from any excess of nitrate of silver, is allowed to dry, or one may proceed as fo lows :

To render this collodion film, thus impressed all over, again sensitive to light, but in the opposite way, it is flowed with an aqueous solution of iodide of potassium, free from iodine, while it is still wet, or with an alcoholic solution if it has been allowed to dry.

The impressed film thus treated by iodide of potassium is rapidly acted on by light, the exposure being about three times longer than that necessary to obtain a negative with the same collodion.

After exposure the alkaline iodide is washed off, then one dips the plate in a silver bath at 2½ per 100, and develop with a solution of pyrogallic acid acidified by lactic acid which only blackens the parts not acted on by light, the result being a diapositive.

The proofs are fixed in a solution of sodium hyposulphite, and can be intensified by well-known means.

P. C. Duchochois.

THE AMATEUR QUESTION.*

The feeling may not be universal, but there can be no doubt that in some quarters at least, a certain amount of animosity is springing up between the professional and amateur. Those who study periodical photographic literature cannot have failed to have come to the conclusion that the relations between the professional and the amateur are strained.

The allegations, are firstly, that professional photography is on the decline; and secondly, that amateurs are in great measure to blame for this.

The first question, then, is, Is professional photography on the decline? At the very outset we are met with a difficulty here. How are we to

* Abstract of a communication to the Dundee and East of Scotland Photographic Association.

determine this? A very little consideration will show that individual evidence is of no use here. Brown, Jones, and Robinson may complain loudly that they do not have the same business by half that they once had, but this may only mean that the business has gone elsewhere. Take a further case. Suppose, for argument's sake, that the whole of the businesses in a locality has suffered; is it not possible that this is due to causes acting on the general prosperity of that individual locality, and not on the photographers only? We have really had no evidence whatever that professional photography is on the decline.

If we could determine the amount of capital invested in professional photography (the only sure test), I am very strongly of the opinion that we should find that professional photography was never in a more flourishing condition. My personal observation leads me to believe that perhaps there may be *fewer* businesses in a flourishing way; but, on the other hand, look at the palatial premises reared on the most valuable sites by the favored few.

In point of fact, photography, like every other business now-a-days, requires capabilities not found in the herd. There are fortunes making yet, even in photography, by those who have the required capabilities, and the race is generally, if not always, to the swift, more so than ever in our day.

Dry-plates, ready-sensitized paper, retouching given out, enlargements given to professional enlargers, reduce the hands in an establishment, and the bustle, perhaps also the profits, even where the trade is as good as ever. While I am ready to admit that business is not, as it once was, evenly distributed over the many, but rather conserved to the favored few, I am decidedly of opinion that the total amount done is as great as ever, and the capital employed in proportion.

But may there not be many *individual* instances in which amateurs have injured the business of the professional? If this occurs to any extent, the question deserves discussion; and in order to open it let us admit, for argument's sake, that it does.

This brings us to the second question, To what extent is an amateur justified in carrying on his sport to the hurt of the professional?

An amateur may be defined as "one who does for sport what another does as a means of livelihood." If this definition be fairly correct, it follows from this that the moment remuneration becomes the motive, the amateur has lost his amateur *status*.

The question, so far, is easily settled. In whatever profession or trade an amateur has certain privileges, and a professional certain responsibilities. It is manifestly unfair that any one posing as an amateur should enjoy all the privileges, together with a proportion of the emoluments, of the professional, however small, without sharing in the responsibilities.

It may be asked, "Because A and B determine to earn their bread *entirely* by photography, is that any reason why C should be debarred from *partially* earning his bread in this way? If the amateur were stealing a march upon the professional by appropriating his inventions, there might be some reason for crying "out" on him; but it is a well-known fact that every invention and discovery in photography has been from the unselfish and enthusiastic amateur.

Much has been said about the generosity of the professional to the amateur. I have gotton much kindness from them, but I have never found them very free to communicate any of these little titbits of information discovered by themselves, nor do I blame them; it is not sport they are after, but bread.

I would make way for the discussion by giving the following opinions :—

Professional photography is not on the decline; there is more capital invested in it than ever. To succeed now-a-days, money must be invested freely, the very best talent secured, and the very best business principles practised. All of the professionals engaged in the business now have not these requirements, therefore some of them are feeling the pinch. The idea that amateurs are seriously affecting the professionals is laughable.

Where an amateur takes a commission, where he knows the job *must* be done by the professional if he himself refuse, I suppose we are at one in saying he acts meanly. "Live and let live," ought to be the motto with every one.

The work of the amateur and the work of the professional ought to be on entirely different lines, with different aims and aspirations. There is not now, and never will be, competition between the amateur and the professional, let them say what they like. No one who takes to photography with presumably artistic tendencies in him, will ever continue to sink his artistic perceptions by working to please the public taste unless he has to earn his bread by it, when, of course, one must produce what he can sell.

Those firms declining to supply the wants of the amateur at market prices just because he is an

amateur will cause a re-arrangement of business in which they will be out of it, nothing more. I should advise its being tried on a *small* scale to begin with.

J. R. Tullock.

SMALL LANTERNS AND DISSOLVING VIEWS.

(Stereoscopic Club.)

THE practicability of reducing the size and diminishing the weight of magic lanterns occupied my attention many years ago. In *The British Journal of Photography*, of May, 1878, I published a description, with illustrations, of two small lanterns which I had constructed. They were very little larger than cigar boxes. The fronts for carrying the objectives were made to disconnect and to pack up inside the bodies when not in use; chimneys were dispensed with in favor of flat tops; they could be used separately as single lanterns, or together side by side, or one over the other. The illustrations and descriptions were republished in the *Magic-Lantern Manual* of the same year. Thus it will be seen that contracting the size, dispensing with chimneys, and packing the front inside the body, is not the new idea many people suppose it to be. With those little lanterns I have given dozens of successful exhibitions at the Manchester Photographic Society and elsewhere, showing the pictures to twenty feet square.

But for a long time, and down to a few years ago, the biunial lantern—*i.e.*, two lanterns in one body, one over the other—was the prevailing design for so-called high-class lanterns, the object of two lanterns being, as everybody knows, for the production of "dissolving views"; and, in these days of lenses of various foci or long-focus objectives, the biunial lantern has grown into a very heavy, elaborate, and expensive instrument. The triple lantern is a higher development of the biunial, and, by reason of unnecessary elaboration and inconvenience, both triple and biunial lanterns have fallen into disfavor of late years.

There are, however, other uses for a double lantern, or two lanterns, independent of dissolving views, as, for instance, one lantern may be used for the projection of ordinary slides, whilst the other may be employed for the projection of scientific experiments, the lantern microscope, polariscope, etc.

But to return to dissolving views. It has been said that this way of exhibiting improves poor slides, and also helps out a weak lecture, and that it has a very pretty effect; so, if people want dissolving views, they must have them.

What is meant by dissolving views is that one picture fades away, or "dissolves" simultaneously with another picture being made visible—*developing* on the screen.

To produce this effect two lanterns are indispensable; with a single lantern we may have quick-changing carriers, panoramic carriers, or others to produce an out-of-focus effect, or an eclipse, or semi-eclipse, during the change from one picture to the other. But the true dissolving effect is only possible by two lanterns, as has already been said.

Now, it matters not what form these two lanterns take. They may be placed side by side diagonally, as in Dancer's lantern, or one over the other, as a biunial lantern. The idea that a biunial lantern is more conveniently manipulated by one operator may be entirely dispelled. The proper place for a lanternist to stand is at the back of his instrument, and with a properly constructed pair of lanterns everything is within reach, and the opening and closing of side doors and constant adjusting of the objectives for focusing the slides is rendered absolutely unnecessary.

The contrivance for dissolving one picture simultaneously with the developing of the next was originally a "comb" or serrated "fan," worked in front of the objectives by a mechanical arrangement for gradually cutting off the rays from one lantern with the gradual opening of the other lantern.

The late M. Noton, of Manchester, used an iris diaphragm in front of each lens, and by a lever communication one was closed as the other opened. By these arrangements it was necessary to maintain the full light in each lantern during the exhibition.

Mr. Dancer, of Manchester, conceived the idea of turning down the light of one lantern simultaneously with turning it up in the other lantern, and constructed a series of taps actuated by one lever, and immediately after this M. Noton combined the use of these several taps in one plug and body.

Since then the dissolving tap has been slightly modified in design, but it has never been improved; on the contrary, durability and effectiveness have been sacrificed for fine appearances, in some of these fancy-looking taps, six ways are opened and closed in line, on the circumference of a plug three-quarters of an inch in diameter, the object being to get a short plug for compactness, and the very thing that ought not to be. Every mechanic knows that a long plug like a long bearing works better and holds the lubricant. With six ways in so

small a circumference there is too little room for tap to keep tight, the slightest dust or grit cuts the plug, and soon it becomes stiff and jambs, or permits the passage of gas from one side to the other, and as a result little explosions, by the mixing of the gas in the tap, are not infrequent. A well-made dissolving tap ought to be provided with a long plug, with the oxygen openings separated from those of the hydrogen by at least an inch in the length of the plug, and between these there ought to be a groove turned in the plug, say one-eighth inch wide and deep, with a hole to correspond in the body of the tap, so that, in case the plug did not fit tight, the gases could not mix, but would escape by the hole in the body ; and in this arrangement there are only three openings in the circumference of the plug, therefore more tap and more surface to hold a lubricant. In some of these elaborate-looking taps two bye passes are provided, one on the oxygen side and another on the coal-gas side ; the latter is necessasy to maintain a light, but the former serves no purpose whatever, unless it be to increase the expense.

Another method of changing the pictures, and which is a pleasant change from dissolving, is that of one picture rolling up from the bottom displaying another underneath ; this is called the roller-curtain effect. In a biunial lantern it is produced by a thin metal shutter passing between the face of the condenser and the picture The length of this shutter is just in excess of the distance between the optical systems, so that, where the light from one lantern is shut off, the other is open : thus, where the shutter is half way, the sky of the top picture is covered, and the sky of the bottom picture is showing on the screen. Of course, where this is used, the light in both lanterns must be at full.

Now it will be seen that when dissolving from one picture to another this curtain shutter must be entirely removed from the lantern, and when we desire to introduce the curtain effect the shutter must be introduced when the top light is turned down ; but as soon as the shutter covers the top condenser the light must be turned up, and as the shutter is lowered the picture in the bottom lantern has the appearance of rolling up from the bottom, displaying another under it (shown by the top lantern). At this stage we have the bottom lantern shut off, and the only way to open it is to draw it up again after the picture has been changed. Thus the effect of rolling must always be done *twice* together every time it is used, owing to the fact that the shutter can be removed only from the top.

In a pair of lanterns working side by side a similar effect can be produced ; but, instead of rolling up and down, the pictures are introduced sideways, and have the appearance of an unfurling panorama; and, as the shutter may be introduced or withdrawn from either side, the effect may be produced at any time, and for once only and done with, as, for instance, when we wish to skip from one subject to another, or from one part of the country to another.

But the finest effects in changing may be described as a cross between dissolving and the roller curtain. This method was adopted by Mr. Kirnon, the skilful operator to Mr. Ragan, the American lecturer, who visited this country in the early part of the present year.

In the Great Free-Trade Hall, Manchester, these lectures had a run of some weeks, and so far as lantern manipulation, I have never seen that excelled if ever equalled. The screen was thirty-six feet square, and the pictures shown to thirty-three feet square, brilliantly illuminated by limelight.

As seen by the audience, whilst one picture was on the screen another began gradually to develop, and when this was full out the departing picture was not dissolved in the usual way, but, as a friend of mine expressed it, it seemed to "fly away," or to be "blown away." Sometimes its departure commenced from the bottom and finished at the top, sometimes it flew away from one corner and then from another, and in a variety of ways it mysteriously vanished ; at other times they were quietly and steadily dissolved to the end, and at other times by an instantaneous flash from one to another.

By the kindness of Mr. Rajan and his clever operator I was permitted to see the whole manipulation of these effects.

Two lanterns were used placed side by side, the space between the condenser and the objectives was entirely open, whilst a picture from No. 1 lantern was showing the dissolving tap was turned until the next picture was fully developed ; then by a gentle sweep an ordinary lens cap was applied to the back of the objective of No. 1 lantern, and, depending upon the way in which this cap was applied first from one side and then the other, so the picture vanished ; the dissolving tap was then turned farther to shut out the light of No. 1 lantern, a new slide introduced, and so the whole goes on with variations at the discretion of the operator.

Now, it will be seen that capping the lens from the back of the objective is very different to the rapid or abrupt cut-off by capping in front of the objective. I shall now have pleasure in exhibiting a few effective changes such as I have described.

W. I. Chadwick.

THE ENGLISH PHARMACIST AND PHOTOGRAPHY.

[From an English Correspondent.]

The number of photographers in England is still on the increase, both professional and amateur, the hosts of the latter being practically countless. One finds them cropping up upon every conceivable occasion, and with all manner of instruments and styles of apparatus, from the minute detective camera, the size of the palm of the hand, to a ponderous landscape camera, capable of taking photographs of immense dimensions, and requiring a hand cart or a retinue of boys to carry the various parts.

The various patterns of detective cameras are mostc ommon, and votaries of this scientific and artistic pleasure make use of them in all sorts of places, on the steamer, on the waggonette, the "penny bus," the cycle, in the railway train, walking, driving, sailing, balooning, and in fact everywhere on this mortal earth where human man can go, and by every method he pursues in going there.

It is true that the results of the amateur's work are as various as the patterns of cameras, some being excellent photographs, and others barely recognizable, this as a rule resulting from lack of experience. However,

"'Tis not in mortals to command success, but to deserve it."

And he who is unfortunate at first must persevere, and will doubtless be as thoroughly successful at the end of his probationary period, as he was unsuccessful at the beginning. Indeed the work of many amateurs is perfectly equal to that of professionals, more especially in landscape photography; portraiture is an entirely separate art, and requires such special apparatus and lighting arrangements that the amateur rarely produces a portrait that can be said to be "true to life."

Considering then how great is the demand for chemicals and other accessories required in the art, one is not surprised to find how many English pharmacists make a specialty of their "Department for Photographic Goods"—notably those who are fortunate enough to reside at a fashionable seaside pleasure resort, or in the midst of picturesque scenery, as is prominent in so many of our inland towns. The demand for photographic goods is so great that it is almost a necessity that all chemists shall keep them, and one is surprised when one occasionally fails to get what one wants at the nearest pharmacy.

Those English pharmacists who do not undertake any business in photography, generally have one or two reasons for their non-conformance with public expectations. They either do not think it consistent with professional etiquette to embark in anything but pure pharmacy, and overlook the fact that in photography there is a great field for scientific research; or they fear that the undertaking entails a great amount of study, for which they do not feel inclined.

Unfortunately for the English pharmacists, he does not now enjoy a monopoly of pharmaceutical preparations, and those who look ahead feel that it is necessary to make some addition to their business, if they are to sustain the profits as of old; and of all new fields, photography is certainly the most scientific and the least possible downfall from their most lofty professional pinnacle. The sale of photographic goods certainly does entail the acquirement of a certain amount of general information about the different processes that are used in the art, but no pharmacist should be two indifferent to gain this, and there is not the slightest ground for an objection to be raised on this point.

Turning to the other objection sometimes made, the loss of professional etiquette, this cannot hold good, for there are hundreds of intricate chemical and physical problems concerning the processes of the art, that are yet awaiting solution, and a field of possible discovery open to the enquiring chemist that will not be exhausted for many years to come.

There is hence no reason for holding back, and though "photographic chemists" do not yet form the majority of our English pharmaceutical world, there is little doubt that in but a few years, every chemist will supply the wants of amateur and professional photographers, and that not without any feeling of impropriety or loss of professional standing, but with a perfect confidence in the dignity of the proceeding and the legitimacy of it, from the pharmaceutical standpoint.

Apart from the business advantage itself, those who sell photographic goods in this country find a great increase in their number of regular clients, as one or more members of nearly every family are enthusiastic in the art, and are hence frequent visitors at the photographic chemist's with the result that the remainder of the family generally follow in their wake.

A large number of our English pharmacists indulge in photography in its various branches as a pastime, in addition to their developing it in business, and for these, the abundance of beautiful scenery close at hand, and on every side, in England, constitutes a large and valuable field for the exercise of this combined science and art. Such a man naturally has an advantage over his non-practical colleague, for he is able to give much detailed information that cannot be learned without the practical pursuit of photography. Amateurs in this country are of just as enquiring a turn of mind as elsewhere, and the man who is theoretical alone, finds that he is often asked some simple question, that he is not able to answer, hence the practical man is turned to for advice, and it often follows, that he supplies the goods.

Practical photographic chemists in this country, occasionally, especially if the town is dependent upon visitors for its support, lend their dark-room to amateurs for developing their plates, and this is naturally a great boon to the amateur, who generally finds a difficulty in carrying about a large number of exposed but undeveloped plates, without their getting spoilt by the light. When this practice of lending the dark-room, is carried out, it is either in return for a small fee per hour, or for the exclusive right of supplying all the necessary solutions, which, of course, comes to nearly the same thing.

In addition, some also keep a stock of books on photography and even the weekly periodicals on the subject, but this is in isolated cases only, and cannot be regarded as a practice of many English pharmacists, and it certainly cannot be recommended as it encroaches too far on the domains of the bookseller.

Photographic chemists in England may be said to carry on their business in three different classes, each one of which may be regarded as a gradational stage in the establishment of a full and complete business in photographic goods in all its branches.

There are many chemists who content themselves with stocking the chemicals that are in general demand by the

photographic public; most of these in addition keeping all the small accessories such as printing-frames, developing dishes, measures and sundry goods of that description, such as do not deteriorate by keeping, and are in fairly frequent request. These may be regarded as being in the first stage.

There are further, those who in addition make a feature of the sale of various brands of sensitized papers, and of dry plates; goods, which, as is well known, do not improve by keeping, and hence require that a good deal of discretion shall be exercised in their purchase. Generally only three or four representatives of this class will be found in a fair-sized town, and these are generally those who have made some arrangement with a professional photographer to supply him at cost price, and are thus enabled to keep their stock fresh for their amateur clientele. These may be said to have attained the second stage of the complete photographic establishment.

Lastly, in most towns of any size, will generally be found one enterprising pharmacist, who shows an assortment of apparatus of various descriptions — cameras, tripods, and lenses by various makers—and who makes a fairly good thing out of his large stock. There are not very many instances of this class in England, as photographers, both amateur and professional, have so got into the habit of getting apparatus and lenses from the manufacturers direct, that it would to be difficult to break them off it, and persuade them that they could do as well by ordering through an agent.

Doubtless, the reason holds good, that the apparatus is in newer condition when ordered direct, and this is sufficient explanation of the fact, but if no manufacturers would supply to amateurs, the reason would not hold good, and the business would come into the channels of the retail dealers.

With this brief account of the manner in which photographic chemists conduct their business in England this letter must be concluded; without doubt, every pharmacist will, in time, find it well worth his while to give prominence to the sale of photographic goods and sundries, thus doing good to himself, and benefiting the numerous followers of the art.

CHANCE AND CERTAINTY IN WORK.

A COURSE of four lectures on "Chance in Relation to Conduct," given last week at Gresham College by the Professor of Geometry, Mr. Karl Pearson, may afford matter for profitable thought to those engaged in all phases of work or activity, and we need not go back to Aristotle to be told that the man who takes such a fundamental interest in truth that he studies it for its own sake—that is, with the true "scientific" aim—is often more likely to do real service to the community than one who sets out with what is commonly called a "practical aim." The investigator who studies fundamentally, and in the simple desire of knowledge, gives to the world a wide basis upon which the so-called practical applications can be made in many directions; but often the student of fundamental principles—*i. e.*, the scientific investigator—receives neither social reward nor recognition; while an astute business man, like Mr. Edison, having a keen instinct of applying to the arts such investigations as have been made in the scientific* spirit, often secures a superabundance of social distinction. The two instincts, science and art, are often combined, as in the case of James Watt, who, by a series of purely scientific researches, showed the way to make the steam engine a far less wasteful source of power than it previously had been. Much of the above has been insisted on by Mr. Pearson in some of his previous writings, where he has clearly recognized that we have no means of measuring the real value of an individual's contributions to the labor stock of the community; while in labor such as that of Newton, it would need a very advanced and enlightened condition of society to select the man, arrange wages, and set him to work. Probably, as a means of giving full play to useful advance, nothing is better than to cultivate mental freedom by increasing such opportunities as are offered by widespread and unfettered educational facilities. "It is the opportunity of self-development, the provision of a field for its activity, and some amount of social recognition, which are really needed to produce and utilize the talent of the community," says Mr. Pearson; and he points out that "the opportunity of a free education given by a sizarship at Trinity College had more to do with the production of Newton as a giant laborer than all the rewards of the competitive systems."

Photographic workers very often speak of something happening being a mere matter of chance; but Mr. Pearson told his audience that chance in its most absolute sense has no existence. It lies in our ignorance of a series of finely-balanced causes, and very largely from the fact that we, in our ignorance, classify unlike events as similar or like—the various tosses of a coin, for instance.

"Statistics form the basis of all human knowledge," said the lecturer; "our belief in routine being really based on statistics gathered by previous observation, gradations of belief following in an approximate way the statistics of previous events. On this is based De Morgan's view as to the scientific and numerical measurement of belief, a view controverted by Dr. Venn, who held belief to be rather subjective than having an external or objective basis. As an illustration of the subjective side of belief, the lecturer referred to the case of three persons contemplating a professional tosser of coins in a railway carriage. A country bumpkin may assume the chances to be equal; a scientific man may remember that the coin may have a bias; while a man of the world will know that the professional tosser makes certain of his result. As man's knowledge becomes wider and more perfect, his subjective view of chance approximates more and more closely to the objective view. These statistics form the basis of all our knowledge, and also the basis of our habit of applying the term "cause" to the earlier events of an oft-repeated series.

Mr. Pearson incidentally touched on the non-relation of mathematics to the Kantian doctrine of pure reason, or reason apart from experience—methematical conclusion being really in the definitions. The belief in continuity of experience, like all other beliefs, Mr. Pearson traces to statistics, these being often unconsciously assimilated, and often taken from the experience of others.

Degrees of belief in the continuity of various classes of events are influenced by general views. Thus, a man

* Aristotle's definitions of "science" and "art" remain practically unchallenged to the present day, and have been almost exclusively used for two thousand years by the most careful writers. They are: "science, a demonstrative habit," and "art, the habit of making."

may have had an unbroken affirmative experience of the three events: 1. Winter following the summer; 2. Empty cab in certain section of Fleet Street at 4 P.M.; 3. Empty cab at a given city cab stand. Still, the basis of belief is different; our general experience of the constancy of natural operations imparting the highest degree of belief in the first case, while in the second our belief is less, as we know social disruptions occur occasionally; and in the third, our belief is least, as the fiat of the Commissioner of Police may abolish the cab stand.

The interest of the course centred on the doctrine that chance is not a definite value associated with the occurrence of a single event, but has rather relation to groups of events, and is, in reality, a record or statement of the results of past experience, associated with that belief in continuity which itself, is one of the results of experience. When one's ignorance is complete, all possible events should be regarded as equally likely, and our "ignorance should be equally distributed" over all these events—in other words, no law of chance can be taken as applying to a single event. There is no universal tendency in statistical figures to group about half, or, indeed, about any other constant—a principle thoroughly established by recent researches of Professor Edgeworth. As an experimental fact, if ten coins are simultaneously tossed (bias being eliminated by alternately reading heads as tails and tails as heads), about one-fourth of the throws will give five heads and five tails, and at first sight this may look like a preponderance of the medial position of things; but it must be remembered that no less than 252 combinations of the coins may be presented under the form of five heads and five tails, while under the form of ten heads only one combination is possible. Hence, on the principle of all combinations being equally probable, only one "ten heads" may (in the long run) be expected for each 252 of five heads and five tails.

It would be outside our province to give any complete abstract of Mr. Pearson's instructive and thought-provoking course of lectures, but as far as it impresses the doctrine of the equal distribution of ignorance, and that chance as a scientific study, has no relation to single events, the course may have a bearing on all industrial operations.

The lecturer and the audience formed an interesting physiognomical study, and a few racing and betting men, who appeared to have attended the first lecture in the hope of learning something "useful," stood out in marked contrast with those who took a real interest in the scientific aspect of the subject. As nothing of interest to the betting man transpired, he became less noticeable as the course progressed, and we could not trace him at all on the occasion of the last lecture.—*Photographic Work.*

METHODS OF ARTIFICIAL ILLUMINATION FOR ENLARGING OR REDUCING.

Now that we are well into the lantern season and the period of home employment, in contra-distinction to outdoor work with the camera, the question of artificial light for purposes of enlargement or the production of lantern slides, will, no doubt, assume an increased importance with many of our readers. For contact printing, whether on glass or paper, the matter of lighting is one of comparatively minor moment, since almost any form of artificial illuminant—even down to a wax vesta—will answer every purpose with our modern films.

But the case is altered when the camera has to be used, as must necessarily be the case when a reproduction on a different scale from the original negative is required, for the difficulty then arise with artificial light of securing an equal illumination of every portion of the negative. With daylight this difficulty is not experienced, since the parallel rays—or practically so—coming from a tolerably clear sky give a uniformity of illumination that is quite perfect. Not so with the divergent rays proceeding from the flame of ordinary artificial illuminants, which, while strongly lighting the centre portion of the negative, fall off so rapidly in power towards the edges as to produce the effect of a vignette.

To remedy this defect the correct plan is to employ a condenser—a system of lenses which, gathering up as many as possible of the divergent rays, transmits them in a slightly convergent cone of uniform illumination on the negative to be reproduced. Now it must be plain that, in order to perform this duty in a proper manner. the condenser should be slightly larger in diameter than the diagonal of the plate to be illuminated, and that therefore, on the score of expense, the condenser can only be used in conjunction with small negatives.

As a consequence, from the earliest days attempts have been made to meet the difficulty of uniform illumination in other and simpler ways, chiefly by the use of a number of separate lights either stationary or in motion, and aided by reflection and screens of various kinds, in order to increase the equality of the diffusion obtained. Many such plans have been described in these pages from time to time, and only in our last issue a novel method is mentioned as having been brought before the Liverpool Society by two of its members. The plan is sufficiently ingenious in conception to be worth noticing.

It is based upon the adoption of the magnesium flash system, but the novelty consists in the method of securing uniformity of illumination over a considerable area, the limits of which, are, theoretically, unbounded, through practically certain mechanical considerations must receive attention. A mixture of magnesium powder with finely divided chlorate of potash is spread evenly over a sheet of papyroxyline or gun-cotton paper, and a second sheet is then superimposed and made to a space so as to enclose the flash powder. As is well known, magnesium when burnt in the presence of oxygen, or any oxygen-giving substance like chlorate of potash, produces an extremly actinic light, and in the combination referred to the gun-cotton supplies the means not only of securing perfect combustion, but also the necessary uniformity of diffusion.

In use, it is only necessary to fix, or suspend, a sheet of the flash paper the size of, or preferably a little larger, than the negative, at a short distance from the latter, and upon igniting it a flash or flame of great intensity and evenness will occur over the whole area of the plate. The uniformity of action produced by such an arrrangement would, it is not difficult to imagine, be sufficient to satisfy all requirements, even when used in close proximity to the negative; but, when a moderate distance intervenes between the plate and the source of light, the effect should be almost perfect, though, of course, a larger area of flash paper would have to be used. And here comes one of the possible objections to the method,

namely, the inconvenience of igniting or exploding large sheets of papyroxyline, rendered additionally dangerous by the combination with chlorate of potash. Another difficulty that can easily be foreseen is the danger in handling the compound paper, especially in cutting it to size, as a very slight amount of friction would, we imagine, suffice to ignite it, with possibly not very pleasant effect.

The generally safer plan will be to adopt one of the many systems of multiple lights that have been described in our columns. The flash system with magnesium powder lends itself readily to the production of uniformity of illumination owing to the comparatively large surface of flame produced; but it is liable to the objection already mentioned, the danger and inconvenience of igniting large quantities of the powder at once and of making successive exposures with the accompanying cloud of smoke. The ignition of a single strand of magnesium wire or ribbon, except at a considerable distance from the negative, can certainly not be recommended on the score of evenness of lighting, and with the increase of distance comes a loss of illuminating power that seriously militates against its practical efficiency, so that the multiple system of lights is the one to be preferred.

The first arrangement of this kind that comes to our recollection is one that was shown at a meeting of the South London Photographic Society in 1879 by Mr. Brittlebank, and, though specially intended for portraiture, it seems to commend itself equally for the purposes we have under consideration.

It consisted of a screen or sconce of bright tin provided with a number of tubes at regular intervals over its surface, through which strands of magnesium wire could be propelled by means of a simple mechanical arrangement. Beneath these tables were, if we remember rightly, rows of small gas jets for the purpose of igniting the magnesium. When an exposure was to be made the gas jets were lighted, and could be kept burning during the whole evening at a single expense. The separate strands of magnesium passed over or between rollers, all of which were actuated by the motion of a single winch handle, upon turning which the several strands of ribbon were pushed into their respective gas jets and simultaneously ignited.

For the purpose of securing complete equality of illumination over the surface of a negative of ordinary dimensions, say half-plate, it would probably be desirable to replace the bright metal screen or reflector with one having a dead surface, and of course it would not need to be of such large dimensions as for portraiture, some half-dozen strands of ribbon placed three or four inches apart being sufficient. It would in any case be desirable to allow the light to fall upon a sheet of ground glass placed a few inches from the negative, which, without intercepting an inconvenient amount of light, would conto greater uniformity in its diffusion.

Another method consists in the adoption of a reflector of roughly parabolic form, which may be used with a single light produced from ribbon or wire, or preferably by means of magnesium powder falling into a gas or spirit flame, placed on the focus of the reflector. The production of a reflector having truly parabolic curves is not an easy matter, but sufficient accuracy for our present purpose may easily be attained. A simple method of plotting out the necessary curve with extreme accuracy was exhibited at one of the "Brittlebank" meetings in 1879, and described in a leading article in our columns, but the mechanical difficulties surrounding the actual construction of such a reflector are considerable. A very effective, and, for all practical purposes, accurate instrument, may be constructed as follows:—

The object is to collect the rays proceeding from a point of light in a given position—known as the focus of the reflector—and to throw them out in a parallel or very slightly converging beam, the parallelism or otherwise depending upon the accurate position of the light. In the case of a large flame, and especially of a flash of magnesium powder, this becomes of less importance. Having plotted out the curve of the required reflector by the method alluded to, proceed to cut a piece of inch pine to the shape and dimensions required, and use this as a mould or pattern on which to bend a number of stout wires. Next prepare a circular piece of wood the size of the opening or mouth of the reflector, and bore at equal distances round its edge, a number of holes, into which the curved wires are inserted, with their other ends meeting at a common centre, so as to form a sort of cage. In fact, if the mould or shape be placed in the hands of a birdcage-maker, with instructions to make a cage to that pattern, it will be the easiest way of securing a basis for the reflector. Of course the more numerous and close the wires the better will be the ultimate effect.

Having obtained a frame or foundation, proceed to apply it in the followiug manner: Cut a number of strips of paper wide enough to extend over two or three of the spaces between the wires, and it will make a better job of it if these strips are roughly shaped to correspond with the spaces. Having thoroughly moistened these, proceed to lay them as smoothly as possible over the wire foundation, joining the edge only with paste. When the frame has been entirely covered, si nilar strips are pasted over the first in repeated layers until a sufficiently strong shell has been formed, in the case of these last strips the whole surface, and not the edges only, being covered with the adhesive. The first layer of paper may be white, but brown paper afterwards will give greater solidity.

When, say, five or six layers have been built up, the whole arrangement must be put away in a moderately warm place to become thoroughly dry, and when this occurs the stiff shell is carefully removed from the wire foundation. The necessary apertures are then cut for the introduction of the illuminant and the escape of smoke, and the whole thing finished off in the best manner that suggests itself.

A less perfect reflector, but still an efficient one, may be constructed by nailing together four triangular pieces of wood so as to form a square pyramid, the shape of the sides and their consequent slope being so calculated as to throw out the rays proceeding from any agreed point in a nearly parallel direction. Such a reflector is within the capacity of any one who can use a saw ever so little, and in practice answers very nearly as well as the more perfect form.

The arrangements for inserting the light, be it gas or spirit, must be such that the magnesium is ignited at the focus of the reflector as calculated. If the whole can be made adjustable after the manner of the jets of an ordinary lantern so much the better, for then the position can be altered until the greatest evenness of illumination is obtained.—*British Journal of Photography.*

Notes and News.

Aluminium Chloride in Gelatino-chloride Toning Baths and with Amidol.—Herr Stolze recommends aluminium chloride as a good substitute for common alum or chrome alum. The same gentleman also employs it with amidol for developing gelatino-bromide prints in order to harden the gelatine, adding a volume of aluminium chloride, 1:100, equal to the volume of the developing solution. Development is thereby slowed, but more detail is said to be obtained, and the prints, after development, will stand a comparatively high temperature of the wash water, higher, in fact, than if aluminium had not been employed.

Make your own Aristotype Paper.—Photographers who have experienced the difficulty in obtaining reliable aristotype paper in uniform quality at short notice, will appreciate the new emulsion paper which has recently been introduced ready prepared for taking the aristotype sensitizing bath. It is easily worked, very much like the old reliable albumen paper, and gives uniform results, producing an effect exactly like aristotype paper, but without any danger of blisters or the other annoyances which frequently occur with this paper. The sensitizing bath is as follows:

Silver nitrate	1 ounce
Water	8 ounces

Float two minutes.

TONING BATH.

PURPLE TONES.

Borax	6 drachms
Water	2 pints
Gold	6 grains

BLACK TONES.

Sulpho-cyanide ammonia	6 drachms
Water	2 pints
Gold	6 grains

This paper can be worked by any one, and always gives satisfaction. It is so simple and reliable that it will unquestionably supersede to a great extent, the ready-prepared aristotppe paper, now upon the market.

TONING WITH ALUMINIUM CHLORIDE.

ALUMINIUM, which has become the metal of the period since it has been discovered how it can be produced cheaply, has also been pressed into the service of the photographer. We mount our lenses in aluminium, it has been substituted for brass in the construction of cameras, decreasing thereby very considerably the weight of our apparatus, developing trays have been made of it, and it has been added to the powdered magnesium for the production of an improved flash-light.

Whether or not aluminium or its salts have been heretofore employed in photo-chemical processes I have not learned, and as I employ its chlorides very successfully in the toning of matt-surface and albumenized paper, priority can justly be claimed by me, I think.

The addition of aluminium chloride to the gold salt, is not only a novelty, but it is an important step forward; and, when I describe my method of working to the readers of "The American Annual of Photography," I do so to give it the widest possible circulation.

If matt-surface paper is preferred for printing, salt it in a solution of 300 grains ammonium chloride in 1 gallon of water, sensitize with nitrate of silver 1 in 10 and fume, or use a solution of ammonio-nitrate of silver of the same concentration, when fuming can be dispensed with, provided the paper is not of spongy nature, and solid enough to prevent the silver from sinking in. Print somewhat deeper than the desired shade of the finished picture, wash and tone.

To prepare the toning bath dissolve 20 grains of aluminium chloride in 12 ounces of water, and make it decidedly alkaline with bicarbonate of soda; as much as 85 grains seems to be the quantity to produce the best effects.

When the solution reacts alkaline, hydrate of aluminium separates in a flocculent gelatinous form. Allow to settle, and filter the solution. Add a sufficient amount of gold chloride, just enough to tone with it a certain number of prints, always keeping in mind, one grain of chloride of gold will tone at the utmost one and a quarter sheet of paper, not more.

Chloride of aluminium in this process is by no means to be considered as a substitute for gold, but an aid; it enhances the beauty of the picture, its brilliancy, depth of color and detail in light and shadow.

Toning should be accomplished in from eight to ten minutes. To judge of the tone attained cannot be determined by strict rules, but must be left to the experienced eye of the operator. A print not toned enough does not show a visible improvement on the ordinary gold bath, and overtoning impairs its brilliancy.

As the prints come from the toning bath place them at once into "pickle" (1 gallon of water to 1 ounce salt), which arrests further action of the toning bath and turns the free silver that may be left in the print into a chloride, thereby giving the hypo a chance for free action; you will hardly notice any perceptible change of color of the print upon being transferred to the hypo bath.

A correctly toned print on either matt-surface or albumen paper has a richness and brilliancy not attainable with any of the ordinary gold-baths, no matter how compounded.

John R. Clemons,

In "The American Annual of Photography and Photographic Times Almanac" for 1893.

The Editorial Table.

Edwin H. Littell, of Upper Montclair, N. J., sends us a very pretty aristotype from a negative made last summer near New Milford, Conn.

It is a pretty subject, carefully photographed, but the development was carried too far, producing rather a harsh effect in the finished print. N. Y. Aristotype paper was used in accordance with the recommendations of the manufacturers. If the negative had been printed in a subdued light and the tone not carried quite so far, the result would have been more pleasing.

From Messrs. Sainsbury & Johnson we have received two very pretty cabinet pictures made in the studio by Mr. Johnson. One is an excellent portrait of a girl. The other is a pretty child picture.

From P. H. Rose, photographer of Providence, R. I., we have received a very pretty panel photograph of a child and dog. Technically speaking the photograph is perfection itself, and the posing and lighting is also all that could be desired.

In the "Pictures of the Year," set forth by *The Photographic Review of Reviews* for November, we note the familiar features of Miss Barnes attached to a *lion's* form, and appropriately entitled beneath "The Lion of the Year."

Frank Leslie's Illustrated Weekly for November 24th contains some notable instantaneous photographs by John C. Hemment.

The front page reproduces a large group of the Princeton Foot-Ball Team from one of Hemment's negatives, and the two inside pages contain more than a dozen pictures from his most rapid exposures made during recent notable foot-ball contests.

Among the illustrations of the *Review of Reviews* for December one finds the strong, manly face of Mr. Gilroy, Tammany's Mayor-elect of New York; Charles A. Dana, of the *Sun;* the late Mrs. Harrison; President Harrison and his little grandson; Mr. Gladstone and his granddaughter; five extraordinary composite photographs of different groups of the English Cabinet; some thirty new Governers elected in November in those States of the Uuion which held gubernational elections; Mr. Kinlock Cooke, the new editor of the *Pall Mall Gazette;* various portraits of the late Lord Tennyson, including two full-page illustrations; portraits of Miss Anna Wood and Miss Lucile Hill, of the Wellesley College Gymnasium; a portrait of the distinguished Professor Ihne, of Heidelberg; excellent engravings of seven prominent English poets of the present day who have been considered candidates for the poet laureateship; portraits of past incumbents in that office; new portraits of Mr. Edmund Clarence Steadman, Mr. Edward Eggleston, Mr. Bradford Torrey, Miss Harriet Monroe, of Chicago, an excellent engraving of Dr. Weir Mitchell, Mr. Timothy Cole, Mrs. Annie Thackeray, Ritchie and other persons eminent in literature and art.

Record of Photographic Patents.

486,748. Photograph Display Rack. Julius H. Abram, Akron, O.

486,913. Apparatus for Photographic Printing. Harry E. Tallman, Cleveland, Ohio.

487,159. Camera. Robert A. Ripley, Stamford, Conn.

TRADE MARK.

22,009.—Photographic Paper. A. J. Cohn.

NOTHING IN IT.

"It's an empty honor."

"What is?"

"Being requested to photograph a skull in a medical case."

MISUNDERSTOOD.

RICHMAN.—I would like to have a photograph taken of my interior.

Photographer.—I can't point my camera down there, sir.

Richman.—Why, I've seen lots of photographs of parlors, their contents, and so forth.

Photographer.—Oh!!

Queries and Answers.

388 PRITCHARD.—Bradfisch aristo paper squeegeed upon ferrotype plates refuses to come off. What is the trouble?

388 *Answer.*—Wash the plates well with strong soap water before squeegeeing. Never heat the plate while the picture is on it. Or, your plates are worn out perhaps, full of scratches and bent, in which case you must procure new ones.

389 EMMA G. P.—What is the reason some plates fix quicker in the acid bath, others much slower? Is it caused by a difference in the constitution of the emulsion, or by different development?

389 *Answer.*—A plate coated with an emulsion containing much iodide of silver fixes slowly, one with pure bromide of silver emulsion much quicker. A thinly coated plate fixes quicker than one furnished with a thick stratum of emulsion. A propos of fixing in the acid bath, we have noticed many amateurs attempt to fix in the acid bath to an interminable extent almost, and simply because the fixer does not change color as rapidly as one not acid. Even the acid bath becomes impregnated with silver in course of time to such an extent that proper fixing is almost out of the question. A new bath made occasionally will prevent all difficulties.

390 LEONARD.—I am very much pleased with my Waterbury B lens for landscape and general outdoor work, but cannot say as much for interiors or portraiture, and the least of all for flash-light exposures.

390 *Answer.*—Quite natural. The Waterbury B lens is but single achromatic, and intended for landscape work principally, not, however, that good portraits and excellent flash-lights are within its reach. To make a flash-light group with it, do not stop down to less than *f*/20, use Scovill's magnesium cartridge No. 3, containing 80 grains of the powder, let the distance between object and lens be about 15 feet, use a quick plate, developed with para-amidophenol or amidol, and we guarantee a good and well-printing plate.

391 F. R.—Can bromide enlargements be made with the Scovill Sciopticon?

391 *Answer.*—Of course they can. But it will take a very long time of exposure with a simple petroleum burner.

392 MARLBOROUGH.—Why is thymol preferred to carbolic acid as an antiseptic for gelatine emulsions?

392 *Answer.*—Simply on account of its more pleasant odor. Some emulsion makers use salicylic acid with success, others employ sulphate of morphia, but odor or no odor we think the carbolic acid is the best antiseptic after all.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

Issued every Friday.

W. I. LINCOLN ADAMS, Editor.

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THE PHOTOGRAPHIC TIMES PUBLISHING ASSOCIATION,
423 Broome Street, New York.

Commercial Intelligence.

To the Editor of THE PHOTOGRAPHIC TIMES.

Dear Sir: * * * * * * * * * * * * * * * * I send you also a lantern-slide made with the amidol developer, as you said that you had never tried it for diapositives. I found it works better for slides more highly diluted than for negatives, viz.: ½ ounce of your developer with 2 or 3 ounces of water, and this is sufficient for a dozen slides. I like it greatly.

Dr. S. B. W.

The slide is of an excellent neutral color, with splendid details and of absolute clearness.—ED. P. T.

Andresen's Amidol.—"I want to say that Dr. Andresen's Amidol is immense. I recently made some lantern slides with it, and found that with one-third the exposure which other developers required, amidol developed beautiful positives, just like wet plates, in appearance. It is very energetic and powerful; but the best of all is, that it makes a dry-plate slide look like the beautiful old collodion plate. I used the S. P. C. amidol solution."—JOHN C. HEMMENT.

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Seventeenth.—Because all the leading manufacturers of and dealers in photographic goods are represented in its advertising pages.

Eighteenth.—Because its advertisers receive more returns from ads. in it, than in any other photographic publication. (An unsolicited testimonial from a leading photographic dealer.)

Nineteenth.—Because it is not an experiment, having reached its 22d year.

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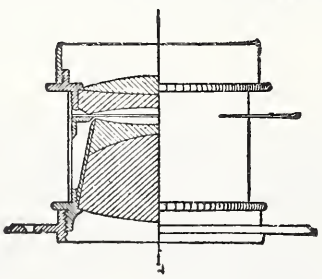
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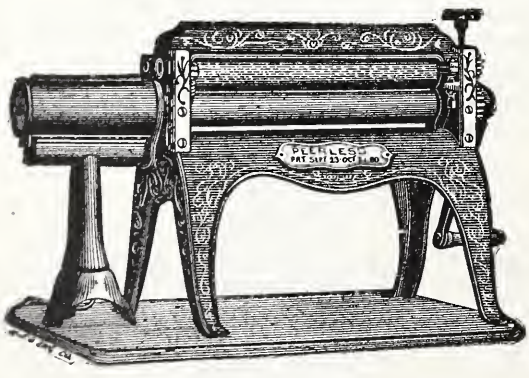
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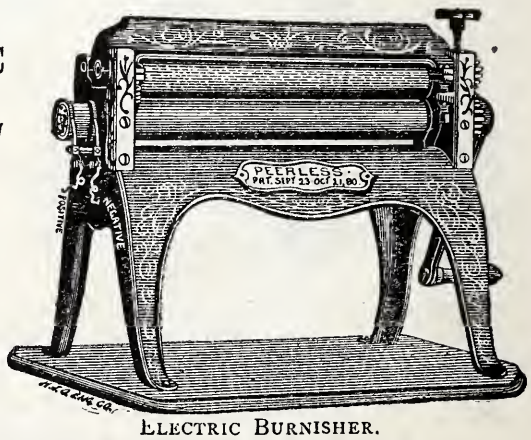
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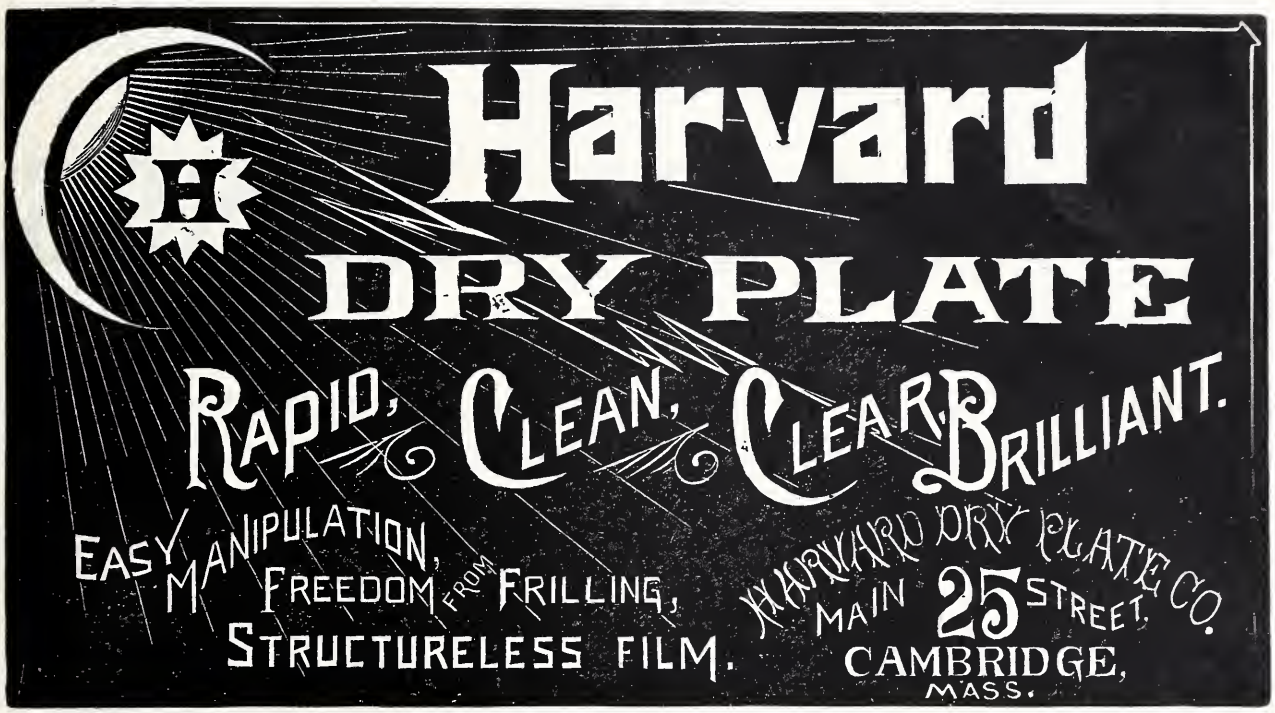
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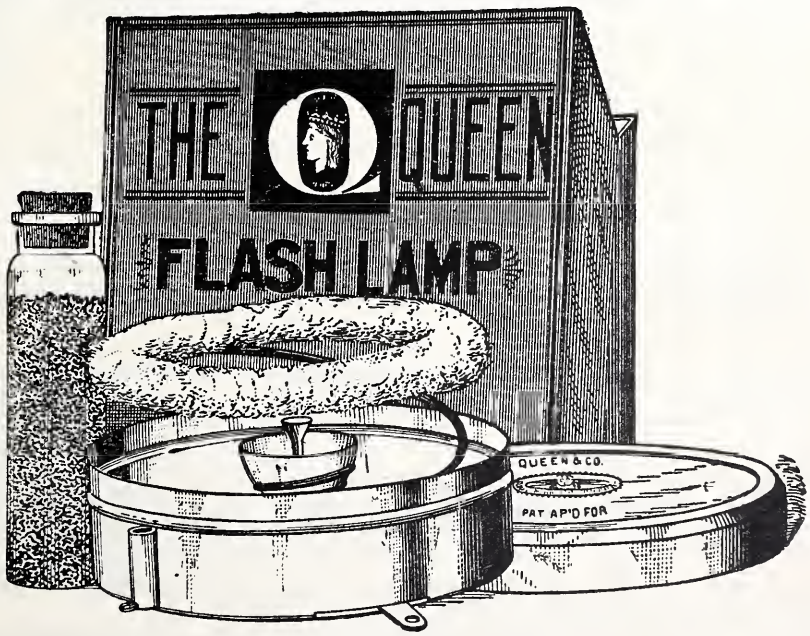
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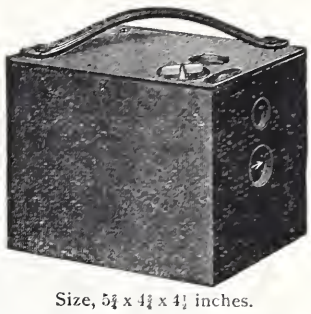
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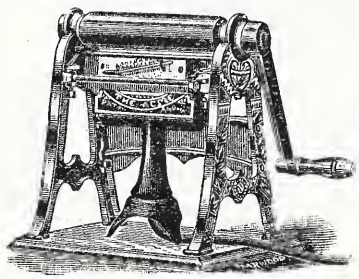
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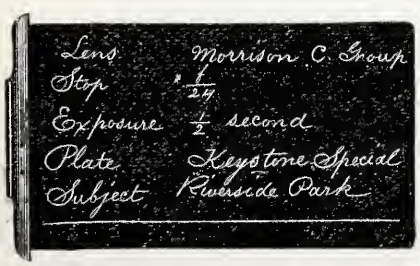
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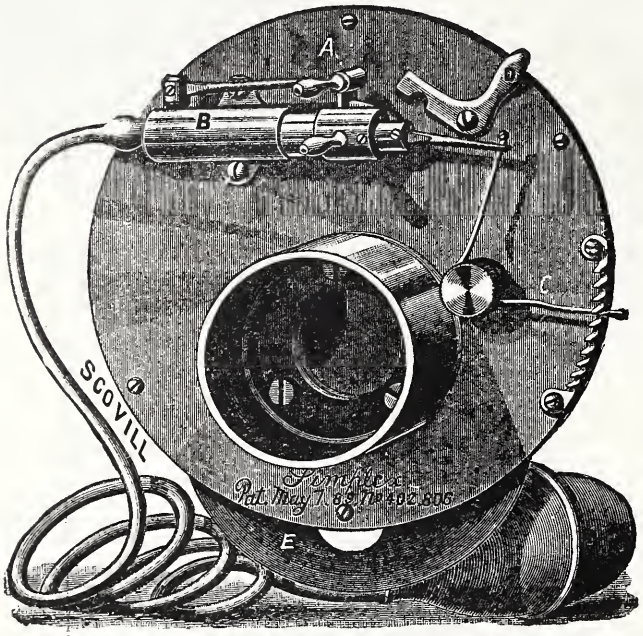
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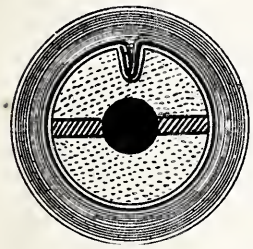
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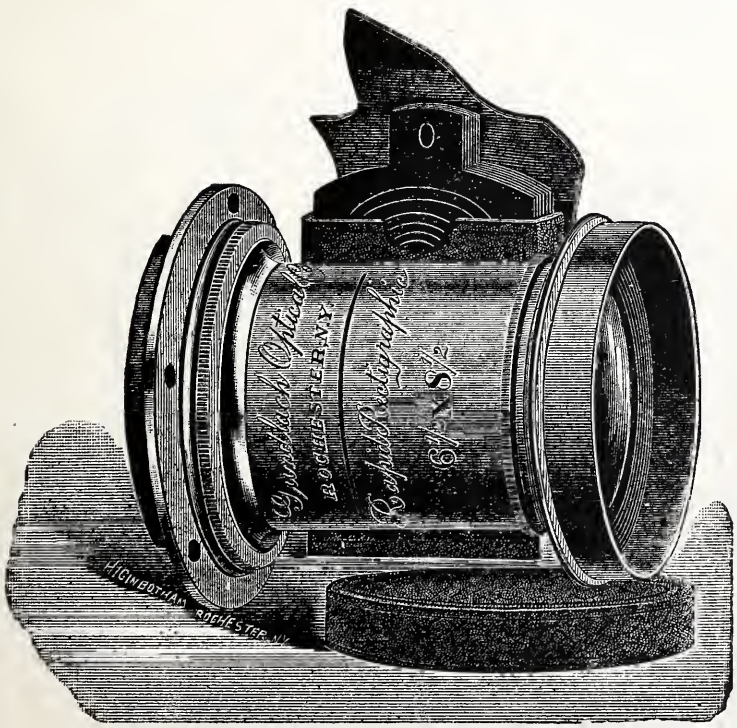
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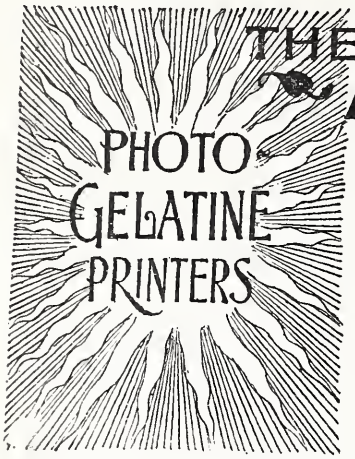
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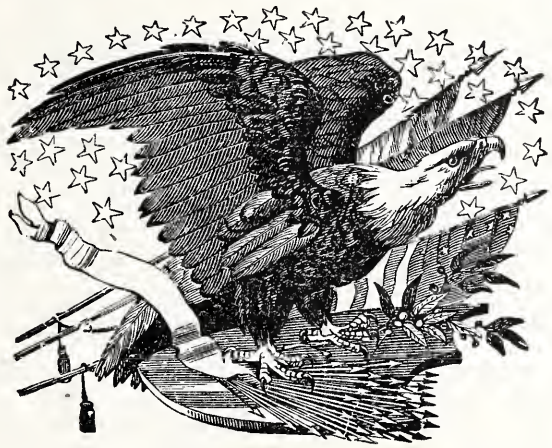
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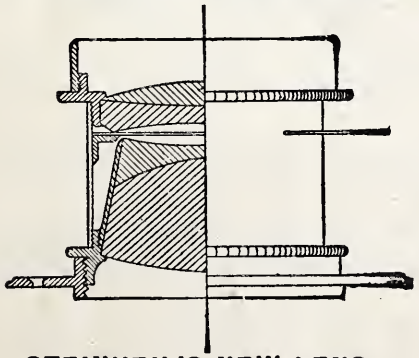
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Those who purchase such imitations must abide by the consequences; for there is only one original and pure Amidol, and that is patented by Dr. M. Andresen, as above.

Very respectfully,

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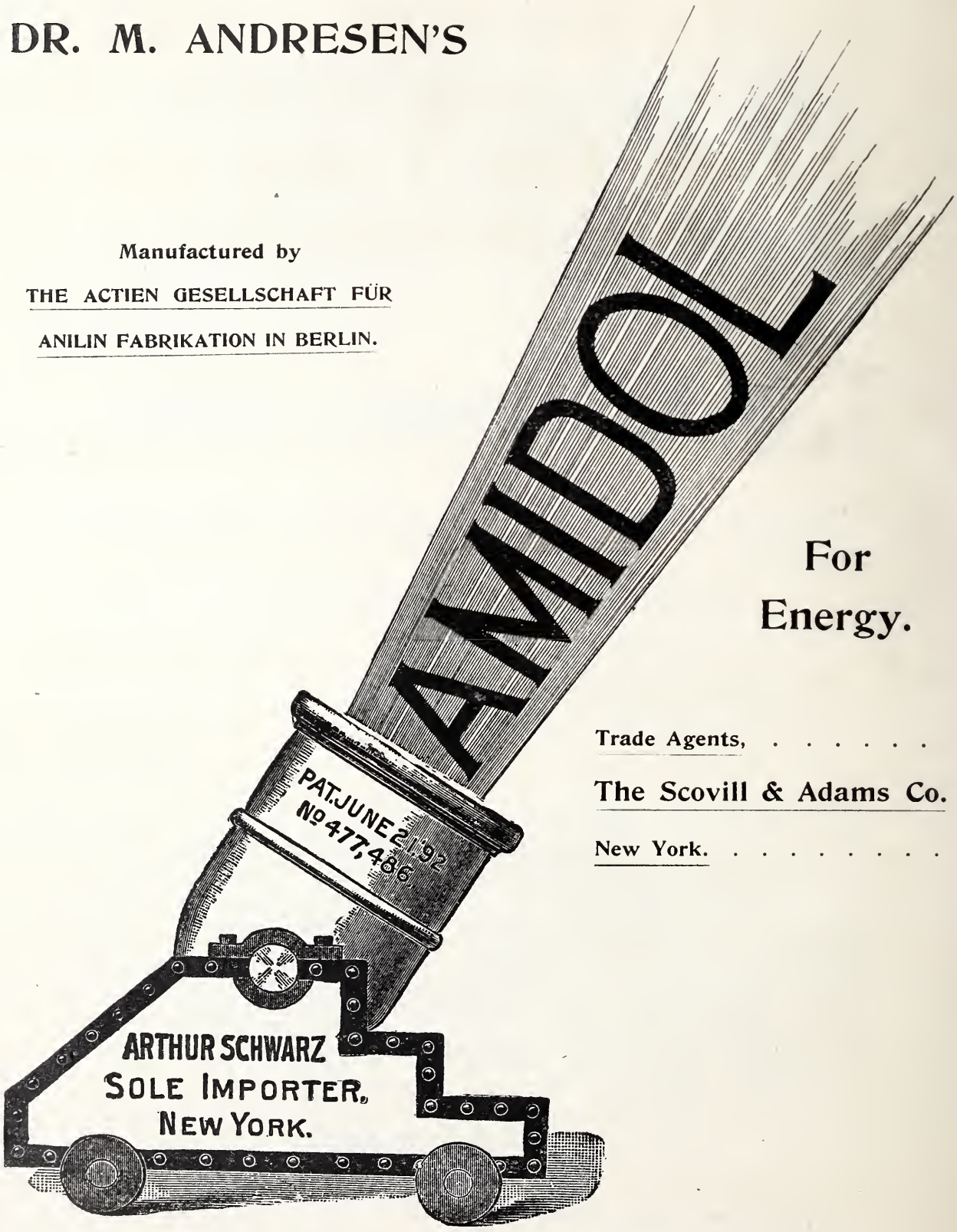
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(OVER.)



W.H. RICHARDSON PHOTO

N.Y. PHOTOGRAVURE CO

Bringing Father's Dinner

THE PHOTOGRAPHIC TIMES.

VOL. XXII. DECEMBER 23, 1892. NO. 588.

BRINGING FATHER'S DINNER.

Our photogravure frontispiece this week is from a negative by Mr. W. H. Richardson, a skilful amateur photographer of New York City. It was made with a Henry Clay camera on a tripod, a timed exposure being given. Mr. Richardson uses a Henry Clay in all his work, and prefers the use of the tripod.

We have other specimens of his artistic photographing which we shall be pleased to give our readers later. This picture is one of the first results which Mr. Richardson made with his Henry Clay, and after only a few trials. It certainly shows an artistic taste in the selection of the subject, and in the manner of treating it. Much of the detail in the negative, however, especially in the deep shadows, has been lost in the photogravure reproduction, but this is unavoidable with certain negatives.

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Magnetic Manufacturing Company, 205 Broadway. For Diamond Point Fountain Pens, Gold Pens and Pencils, Medal of Merit.

John Blair, 141 Broadway. For Fountain and Gold Pens, Medal of Merit.

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The Medals will be ready for delivery at an early day, at the rooms of the Institute, 111 to 115 West 38th Street, between Broadway and Sixth Avenue. Exhibitors will be notified.

AMIDOL.

THE veteran photographer and chemist, Dr. Julius Schnauss, expresses himself in *Deutche Photographen Zeitung*, on the new developer, amidol, as follows:

The substance is pre-eminently well adapted for the development of gelatine emulsion plates, and highly interesting to the photographer because of its ability to become active without the aid or assistance of alkali. On the addition of alkali, in amounts used with other organic developers, the solution turns to a bluish-green color* and loses considerably in activity.

To make the developer nothing but sodium sulphite, neutral, is required, viz.:

Amidol	20 gm. =	5 drachms 8 grains
Cryst. sulphite of sodium.....	200 gm. =	8 ounces 3 drachms
Water.....	1 litre =	34 ounces

This solution should be kept in well-closed bottles, and before using it is diluted with from three to four volumes of water.

To accelerate the process of developing, which need but rarely be resorted to, a trace of a solution of potassium carbonate, 1 in 6, may be employed. Over-exposures are controlled with the usual ten per cent. solution of potassium bromide, and although amidol develops invariably perfectly clear negatives, the acid fixing bath is not out of the way.

First experiments were made with plates sufficiently long-exposed for ferrous oxalate developer, and with others taken by magnesium flash-light. These latter were suspected to be under-exposed, but they developed nevertheless softly, with all expected details and perfectly clear. The others were evidently over-exposed for amidol development. On the addition of bromide of potassium, the blacks appearing first but weak and feeble, gained rapidly and became highly intense, for which reason development should be cautiously watched and not extended to extremity.

Amidol is an excellent developer for under-exposed plates. Were, for example, hydrochinon used in such cases, harsh and glassy negatives would result, while amidol brings forth half-tones and middle tints not possibly to be expected from any other developer. For interiors and whenever a plate has been exposed in light of doubtful energy this developer must be highly recommended. It is also an economical developer, for with 2 ounces of the solution ten plates of 4 x 5 can be well developed.

Amidol is recommended by Dr. Liesegang for the development of gelatine emulsion ferrotype plates.

Amidol..... ...	1 gm.	= 15 grains
Sodium acetate, cryst.	10 gm.	= 2½ drachms
Water.....	400 c.cm.	= 16 ounces

from which very handsome positives of white lustre are developed.

The solution is, however, not very durable.

There is no doubt, amidol, with the addition of citric acid perhaps, will serve well for the development of chloride of silver gelatine plates or papers, when the pictures will require previous washing, of course.

* About the color of the solution of the first eikonogen imported to this country.—ED.

AN AMATEUR.

"CURIOUS fellow, that Junks."

"What is it now?"

"Made a likeness of his boy's hobby-horse and claims to be an expert at photographing animal life!"

C. F. CONLEY.

C. F. Conley, the Boston photographer, who died December 14th, was born in Milford, Mass., forty-six years ago. He was for a long time a resident of Boston, and became prominently known after he purchased Warren's Studio, of which he assumed control about ten years ago. He was known all over the United States as an enterprising, progressive and skilful photographer.

Personally Mr. Conley was quiet and unassuming, courteous and generous and upright in all his business dealings. He leaves many friends in all walks of life, and a widow who has long been intimately associated with him in his business.

At the funeral services which were held Friday, December 16th, in the Church of the Good Shepherd, representatives of the various associations to which Mr. Conley belonged were present in a body: Mr. W. H. Robey, of Horgan, Robey & Co.; Mr. Wilford French, of Benj. French & Co.; Mr. J. B. Pelgrift, of The Scovill & Adams Co.; Mr. I. W. Hall, Mr. W. Tepper, W. C. Paul, Col. John Stalker, and many other personages well known in photographic circles.

On another page we reprint the circular which has been sent out by Adam Heimberger, Secretary of the Photographers' Association of America.

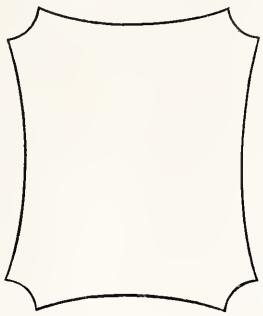
Mr. Heimberger writes that similar circulars, including entry blank, have been sent to the address of every photographer obtainable in the United States, Canada and foreign countries, and he requests that any photographer who has not received these circulars will forward his name and address to the Secretary, at New Albany, Indiana, on receipt of which he will at once receive attention. "Nothing will be left undone to make this the greatest convention ever held, and the assurances already received are very encouraging."

FERROTYPES.

Collodion.

Alcohol (Atwood's)	5 ounces
Sulphuric ether	5 ounces
Iodide of ammonium	40 grains
Iodide of cadmium	20 grains
Bromide cadmium	20 grains
Gun-cotton	40 grains

This will work best when about a week old. It keeps well. It requires considerable practice to correctly flow a plate with collodion, especially if the weather is warm or the collodion too thick. In lowering the plate in the bath any stop will cause a horizontal line on the plate. The plate should remain in the bath about five minutes, or until all greasiness has disappeared. Remove the plate from the bath very slowly, and give it plenty of time to drain. Much silver will be saved in this way. After putting the plate in the holder, a glass cut in shape as shown in cut should be placed on the back of it to prevent the spring in the back of the holder from bending the plate in, thereby throwing the picture out of focus.



The glass is cut in the above shape to prevent silver stains.

A cometless collodion bottle should be used by all means By its use the collodion drained from the plate is filtered as it returns to the bottle again.

Should the collodion become too thick, as it often does, it can be thinned with alcohol and ether in the proportion of 4 ounces of ether to 1 ounce of alcohol.

It is poor economy to try to use anything but pure chemicals, especially in making collodion. The drugs should be purchased of some reliable stock house and not of an ordinary druggist.

I remember once finding a poor ferrotyper in trouble, caused by purchasing some collodion at the drug store. He could not get the faintest shadow of a picture.

The collodion was simply plain collodion used by physicians for artificial cuticle.

J. R. Swain.

(*To be continued.*)

MULTIPLE-COATED PLATES.

[London Camera Club.]

Some time ago I gladly agreed to open a discussion on "Multiple-coated plates," but in the programme my name is put down as though I were to read a paper. As I have only had experience of these plates experimentally I should not like to speak *ex cathedra* about them. Whatever the plates may be in practical photography they have opened up a wide field of experimentation, and there are men who are better able to speak on experimental photography than I am. In discussing this kind of plate we are bound by the facts of the case to speak of one distinct commercial product, and I always feel a certain amount of delicacy in doing

that, because I might be prejudiced one way or the other. By fortuitous circumstances I might get a run of success and take too rosy a view of the plates, or on the other hand, I might get a run of failures, from equally fortuitous circumstances, and be led to condemn them unnecessarily and unjustly. I am going to speak about experiments I have performed, not very numerous, but sufficiently deliberately performed to enable me to say something as to what I have found in the use of them, and I have had the advantage that the firm which supplies the plates has been very willing to supply me with any little modification of the plate that I might ask for, and for this the firm has my gratitude. The only way in which I can divide my discourse will be to consider what are the two special claims made for these plates coated with several emulsions. I am told the claims are mainly, first, that they do away with halation to a great extent; and, secondly, that they counteract over-exposure. I think, however, I will first say a few words on the general aspect of the question. There is, I believe, no secret about their manufacture. Ordinary glass is coated with a somewhat slow emulsion, and after that is dry another coating of emulsion, a more sensitive one, is put on the top of the first. It is a long time since attempts were made in a somewhat similar direction for the purpose of getting over that bugbear, halation. It would hardly be worth while for me to enter into the question of halation now, but those who are not well versed in photography are not fully aware of the mischief that it does. We all know its effect in the case of a window in an interior, but we do not see fully its mischievous effects in an ordinary landscape—I speak of the case where we have foliage against a more or less well-illuminated sky, in which the foliage appears blurred, loses its tone value, and becomes inartistic and unscientific. I believe I am right in saying that the first person to lay down any law as to the causes of this halation was Captain Abney, and his view has been more or less universally accepted—that halation of both kinds is due to reflection from the back surface of the glass. The earliest method of getting over halation was a fairly successful one; it consisted of backing the plates with some substance, in optical contact with the glass, of as nearly as possible the same refraction index as the glass itself, the result being that the peccant ways were to a certain extent absorbed by the medium. This did not wholly or always overcome the halation. Later on, by the use of the thinner films, the amount of halation was reduced. What happened next in the history of halation I am not quite sure, but my memory was refreshed by a letter from Professor W. K. Burton, which appears in *Photography*, wherein he says that some ten years ago he mentioned at the London and Provincial Society that he had been experimenting on the lines of putting between the emulsion and the plate a film of non-actinic character. I think it was gelatine containing silver chromate. He found this worked sufficiently well to prevent halation, but it was an awkward process to work practically, and I believe nothing more was done in the matter. How it occurred to the guiding spirit of Messrs. Thomas & Co. to coat the plate with two emulsions I do not know, but anyhow, we have double-coated plates by this firm to deal with to-night. I think I might now divide my discourse into the sub-divisions. First, the question of the double-coated plate and halation. I need hardly say that the putting of a thick film on a plate, more particularly if the film be of a more or less non-actinic color, will, to a certain extent, reduce the amount of halation. It might be urged that in that case the makers of these plates had nothing to do but to put a double thickness of one emulsion; but I do not think that would be equally efficient. What happens with the plate coated with two films of two degrees of rapidity is, so far as I am able to see, that if an exposure be made on a subject which in the ordinary way would give great halation—say, an interior with a window—if the exposure be only long enough to affect the upper film the result is in no way different from that on an ordinary plate practically speaking, theoretically there might be a slight difference. But if we give a very long exposure to these plates the result would be as I will describe. I tried the plates on a dark room with a large glass door, looking in to a conservatory, beyond which was a lawn—an extremely difficult subject to deal with in an ordinary way. In the case of a very long exposure on this subject the top film received such an exposure that it was reversed, becoming a positive, with nearly clear glass, and light has passed through the top film in sufficient force to produce an image on the lower film with a more or less powerful development. After developing one of these plates I found it possible to remove the top film, and so I was able to see what I have described as occurring. I found that *in the top film* some of the dark parts of the room were fairly well exposed, while the window was reversed and was practically clear glass, while *on the under film* the dark parts were ghosts, and there was a fairly good negative of the window. If I had not stripped the film the plate would have made a fairly good printing negative,

giving the print the mean of the two films. The *rationale* is this. If the exposure is sufficient not only to over-expose the upper film but also to pass through it and sufficiently impress the lower film, the upper would be reversed, while the lower would have received enough light to produce a good negative on proper development. With certain reservations I find that to be true. I will now describe an experiment made in conjunction with Mr. Sandell. I shall only refer to the double-coated plates and not to the triple-coated ones, as the principle is identically the same in both cases, and I shall discuss, as far as possible, principles and not plates. The first thing I desired to find out was whether there was any foundation for the statement that half a second exposure with *f*/64 under trees was sufficient for one of these plates. It was not sufficient *not* under trees; what it would have been under trees I do not know. I found that in a view *with trees in it* the normal exposure to get a good negative on the top film was ten seconds at *f*/32. We then began to see what we could do with a long exposure without losing the plates altogether. I shall stick to what I found myself. I exposed one plate two minutes and another four, so that I had a very gross over-exposure indeed. I developed the plates with Thomas's developer, "Cyclol" (I believe it is a simple mixture of hydroquinone and eikonogen), for a very long time. With a normal exposure a good negative was developed on the top film in the ordinary time. In the case of the plate I exposed for four minutes it came up very rapidly, and in two minutes the view began to show on the back of the plate, after that I left it in the developer for about twenty minutes or so. When it was fixed you could see absolutely nothing through it. I then reduced the plate with ferricyanide, and the result was perfectly successful. The plate became as good as the normally exposed one. When I first used the plates I did not find that my results tallied with the claims made for them both publicly and privately, but I found out the reason to a certain extent, and a great deal of the importance of this subject depends on that reason. If you take one of these plates and over-expose it in the ordinary way, say, two or three times too much, you will not get any better result than with an ordinary plate; but if you over-expose it ten times too much—I don't venture to lay down the exact line to be drawn—or twenty or thirty times too much, you will produce a plate which will be developable into a fairly good negative, according to my experiment. The fact of the matter is that if you expose long enough for the light to penetrate the upper film and act with sufficent energy on the lower one you will be able, by long enough development, to produce a good enough image, which may or may not require to be reduced. This point is responsible for many of the failures with these plates. With a little over-exposure, such as a person might give by mistake, these plates would present no advantage whatever, but if, either unintentionally or by error, gross over-exposure was given, a good result might be obtained, It is the same with regard to halation. The normal exposure for my drawing-room, which I have described, I found to be two minutes with *f*/16; with a five minutes' exposure I did not get such a good result as with an ordinary plate, but with a fifteen minutes' exposure, and appropriate development, I got a better result than I should expect on an ordinary plate. Unless the exposure is long enough to allow the light to impress the lower film these plates have very little advantage over ordinary plates. From an experimental point of view, I directed my attention to the facility with which the top film could be stripped off, and I did so for the purpose of seeing what amount of light would pass through the top film. I was quite surprised to see how little light did pass through, that is to say, unless the exposure was very long practically no light passed through the upper film. This led me to think certain things as to the theory of halation, and I wish to say, with a view of "drawing" Captain Abney, that I was surprised at the small quantity of light which passed through and could be reflected from the back of the plate. Captain Abney has given me a very good explanation of the matter. I think there are some gentlemen here who will be able to state their experiences with these plates. I have given my view without prejudice of any kind. I do not find that with a normal exposure there is any practical gain with these plates as to halation as compared with ordinary plates, nor in the case of slight over-exposure If, however, you give an over-exposure of ten times or upwards you get results which you could not produce with a like exposure on ordinary plates. If you want to make absolutely sure of getting a good technical negative of a landscape or interior you can do so by giving a sufficiently long exposure on one of these plates, and developing them *secundem artem*, that is to say you want to know exactly how to develop them. If you have given twenty times the proper exposure development will have to be very prolonged, more so than if you had only given ten times. Perhaps the most ticklish thing about these plates is that after a short time they become practically a closed book,

a dead black all over, and therefore you have to a certain extent to trust to Providence in development. You can always, however, make sure by developing long enough, and trusting to a reducer afterwards. By that means I have been able to produce negatives of subjects I have always found very difficult.

Andrew Pringle.

DISCUSSION.

MR. SUTTON: I should like to say that it appears to me you must use either one film or the other, that you cannot use both. There is a break in the photographic scale due to the two emulsions, the result being a complete blocking of some of the tones. In order to determine that point, I made some experiments, and took a slow plate, and on top of it, emulsion to emulsion. I put a more sensitive film; the plate was 12 Warnerke and the film 25 Warnerke. I knew exactly the amount of light necessary to cause reversal on the film, and I gave such exposure as would reverse the high lights on the film interposing a negative between the light and the film. I have brought the plate and film. On the film you have a reversed negative, and on the plate an ordinary positive. If you put them one on top of the other, you will find there is a complete blocking out of light. I may say that five years ago I used plates coated twice with the same emulsion.

MR. PRINGLE: Mr. Sandell's view is that where the top film is reversed it becomes practically clear glass, and in that spot the under film becomes a negative. Where the upper film had only received about the ordinary exposure, the details appeared in it in a negative form, while in the lower film there was only the ghost of an image. Mr. Burton, in *Photography*, states pretty confidently that the double coating will increase the scale of gradation.

MR. HARRISON: Mr. Pringle's remarks bring out one advantage with regard to these plates, that by means of them you can have either a slow or rapid plate without carrying two separate plates.

MR. LYONEL CLARK: I have not tried the plates; but Mr. Pringle touched on color staining, and undoubtedly that has a great effect in preventing halation. I remember very well the use of chromate, and I made some experiments. The weak point, so far as I can see, in these plates appears to be the jump which must take place between the two emulsions. I can imagine an exposure of 10 seconds being enough to penetrate the top, but not the bottom film. The exposure must be much longer for the lower film, and it would begin to act all of a sudden, so that there is a great hiatus if the speed of the two emulsions is very far apart. Mr. Sutton's experiment is not very conclusive as showing the effect of these plates. Halation may be said to be caused by great over-exposure in one spot, say a window; but he over-exposed the whole film for the whole time. Mr. Pringle's experiments tend to bear out the claim that these plates cure halation, but they do so by jumps. Perhaps a series of graduated emulsions would overcome that.

MR. PRINGLE: Mr. Burton, in his letter, mentions that he made the experiment about ten years ago:

["As Mr. Henderson does more than claim priority ... I must remind him that at a meeting of the Photographic Club ten years ago or more....I showed plates coated with chromate of silver," etc.—*Photography*, "Correspondence" columns, November 3, 1892.]

Mr. Clark has hit upon an experimentally important point, which I noticed some time ago. I found that very fault of the jump between the two emulsions, which I thought a very serious defect, and I got Messrs. Thomas to coat some plates twice with the same emulsion, and I so got a more workable plate—a plate with which I did not require to give such enormous over-exposure before I got good effects.

MR. GRANT: I have tried these plates, and took some abroad with me. I took it that they should all be over-exposed, and I gave about ten times the normal exposure. Here is a negative with a lake and trees in the foreground, and mountains in the distance. You will see that there are clouds showing, though there is great detail in the trees, and that I do not think would be possible with an ordinary plate. As to the latitude of exposure, I have two negatives, exposed at precisely the same time and under precisely the same conditions—one on a "Sandell" plate and the other on a "Cyclist" plate. I exposed the "Sandell" plate half a minute and the "Cyclist" half a second. The 'Sandell" plate was reduced, and I do not think there is much to choose between the two negatives. My experience also confirms the difficulty of getting a negative if you only over-expose one or two times. Here is the first plate I exposed. I found it became perfectly dense, and I developed it for about three-quarters of an hour. I did not know that the plates should be reduced, so I stripped off the top film.

MR. PRINGLE: I found no difficulty in stripping off the top film in the case of small plates. My remarks as to the effect of over-exposure were based on an examination of both films.

MR. DAVISON: I should like to ask if it would be possible to coat a plate with an emulsion so as to be as thick as both the coats in the Sandell plate; and if so, would not the results of such a plate be *practically* the same? I have used two or three of the plates, but it was merely to get a picture, and not experimentally, and I must say that the development seemed very much the same as that of the "T. C. E. R." plates. That, I thought, was borne out by Mr. Pringle's statement that where you have given great over-exposure by prolonging development you can get a printable negative, exactly the same holding good with the ordinary thickly-coated "Thomas" plate.

MR. PRINGLE: I do not think there would be any practical difficulty in getting plates coated with one emulsion as thickly as the two together on the "Sandall" plate; but there is no doubt that a certain amount of value lies in the fact that the two emulsions are not of the same sensitiveness. The lower film takes up what the other is good enough to pass on. Somebody suggested films of graduated sensitiveness. I think that would be a good thing, but it is not practicable. I do not understand Mr. Davison when he says the results are the same with a thickly-coated plate.

MR. DAVISON: I mean the appearances on development and the printing qualities of the resulting negatives are the same.

MR. GRANT: I have here two more negatives. One with trees, with the sun behind them shining almost directly into the lens. I gave it 10 seconds' exposure, in the beginning of August, and the clouds in it will print, while there is detail in the trunks of the trees on the shady

side. That would not have been possible with an ordinary plate and such a long exposure. The other had, I think, two minutes' exposure in bright sunlight, and though there is detail in the interior of the ruin, the clouds are not altogether lost.

MR. SUTTON: My experiment was made in order to show there was a break in the scale.

MR. GRANT: In one plate I stripped off the top film, and in the lower the clouds were perfectly distinct, though the foreground was lost entirely, but was quite distinct in the upper film, and the two together would have produced a fairly good printing negative.

MR. PRINGLE: I have not my negatives with me, but here are some prints which Mr. Sandell has sent, and one of them is from a negative of mine. It is a photograph of a vine-house, and I have never got such a good result under the same circumstances with an ordinary plate. The greenhouse is a low one, the grapes were green, and the sun was shining straight down at an angle of about 80 deg. near noon.

CAPTAIN ABNEY: Mr. Pringle has very pointedly called upon me to make some remarks. I made my first investigation into halation fourteen or fifteen years ago, and the results appeared in the journals. Incidently I may observe that it is rather strange how curiously ignorant are our friends across the water with regard to the work being done in this country. M. Cornu, a French scientist, and a friend of my own, investigated this phenomenon anew. He was unaware that the matter was not new until I gave him my paper in which I dealt with the subject. I am not ignorant as to the question of double films. Somewhere in photographic literature will be found an illusion to double-coated films on which I made some experiments. I did not think Mr. Sutton's experiments are on all fours with those on double-coated films. Very many years ago I gave a long discription of the theory of development in which double-coated films (collodion at that time) were used. One film was exposed and another one coated on it, and the two were developed together. It was found that an image was developed on the top film as well as on the bottom one. This was proved by afterwards separating the two films. Mr Sutton's films were developed at the same time, and though the experiment is interesting, I do not think it is a parallel with the double-coated plate, as the lower film, when it does not produce an image, gives up a certain amount of bromide of silver to give density. Many years ago when gelatine emulsion first came out, Mr. England and I experimented on the same lines. By using bromo-iodide, you are able to get an orange film, through which it is difficult to get any light on the back of the plate, and that gives the minimum of halation. In those days we did not rob the plate, but gave it an ample supply of the foods convenient for it.

This was before the days of a shilling a dozen for one-quarter plates. I tried various combinations of films—gelatine, and collodion and gelatine, and I think it will be found that I gave an account of the results before the Royal Society. You can get the advantage of either a slow or quick emulsion, you can have one film sensitive to the violet rays and the other sensitive to the red rays. I used them in the latter combination for photographing the spectrum, and so I got a more uniform impression of it than I would have otherwise done. I remember some experiments in which I tried to get different sensitiveness throughout the thickness of the film. The emulsion was thin, and the weather was hot, and so the gelatine was some time setting, and the result was that the larger particles of the silver went to the bottom and the finest remained at the top, there being a gradual scale of coarseness all through the film. A sheet of gelatine paper was placed on it and the whole stripped off the plate, and so the coarsest grains—the most sensitive—were at the top. The result of using this was a very brilliant picture. This was used for the spectrum, the fine particles being sensitive to the blue rays, and the coarse to the red rays. I think there can be no doubt that halation is very much retarded by the use of these double-coated plates. Mr. Pringle said that I gave him a satisfactory explanation us to why halation took place at all, as he said only a very small quantity of light passed through the film. That is so, no doubt; but when experimenting on halation it occurred to me that it would be useful to ascertain optically how halation could be imitated. I took some very fine dust shot and made a plate of that. If you looked through the plate you could see no halation at all, but if you looked on it you could see the light reflected from the particles. It was curious to notice the different colors of the halation due to the varying fineness of the particles.

MR. PRINGLE: I want to say that I cannot help thinking that there is a sort of notion around that I am an exploiter of these plates. It is not so. I have told you, after as careful experiments as I could make, my views about the plates, and I want you to understand that I do not think they are of any real value unless you give them enormous ever-exposure. If you take them out and expose them sufficiently you will get a result on the lower film, but I would not think of taking these plates into the field for any purpose unless I were sure to be faced with great halation, and even then I should think twice about taking them and giving such an exposure as would make life a misery. I have treated the subject in a quasi-scientific, manner, and am not an apologist of the plates.

REV. F. C. LAMBERT: I want to show my ignorance, and now that we have Captain Abney and Mr. Pringle here together they may be able to explain something which is very interesting to me. Can they give the conditions under which we sometimes see and sometimes do not see a positive image on the back of the plate on development? I have an idea on the point, and I should like to have that confirmed or contradicted.

MR. PRINGLE: My idea is that to great extent it hinges on the state in which the emulsion was when the plate was coated. If the temperature has been high there is a great tendency—which Captain Abney has taken advantage of—for the silver salt to sink and get nearer the glass, and if that occurs one would expect the image to be more easily seen from the back.

MR. LYONEL CLARKE: The primary cause is undoubtedly the emulsion tending to go wrong in hot weather, so that the silver falls down onto the glass and becomes burnished silver and reflects a positive image. Any plate will show it if developed long enough.

CAPTAIN ABNEY: I remember in the photographic papers a few years ago there was a great exuberance of joy over the fact that while you were developing a negative image you had a positive image as well. I paid some attention to it, and found that you got it most brilliantly when the plate is not absolutely bright. Do you mean

that you get a yellow bromide instead of a dirty-looking bromide?

REV. F. C. LAMBERT: Not quite.

CAPTAIN ABNEY: If you are exposing a window you see the window more yellow than the rest of the image.

REV. F. C. LAMBERT: Whiter and brighter. In the case of a white collar, say, it comes up white.

CAPTAIN ABNEY: I was speaking of after development. I think Mr. Lyonel Clark's explanation is the right one.

REV. F. C. LAMBERT: I think there is one other element in the case—the temperature of the developer. My plates would probably be over-exposed for most developers, and I develop for half or three-quarters of an hour, and I use water warmer than most people would do. I take it that the effect has been to soften the gelatine, and the larger grains then sink to the bottom; that is equivalent to re-melting the emulsion, and the grains arrange themselves according to size. I have used plates from the same batch, and with quick and cold development I did not get the effect; where the exposure was long, the development weak, and the solutions of warmer temperature, the positive image appeared.

CAPTAIN ABNEY: If you give a short exposure as the development proceeds silver comes from the bottom to the top. I have used eikonogen developer at 150 deg., and got most satisfactory results. There is not sufficient time for the developer to melt the emulsion. In the old days when you used transparent films there was practically no halation. By using celloidin films or backing the plates you do not get rid of halation. You get it where there is any thickness of gelatine. The minimum is where you use a gelatine film.

MR. PRINGLE: I only suggested that using a film reduced the amount of halation.

MR. SUTTON: In using medium isochromatic plates with a yellow screen, I find the halation of fine twigs against the sky reduced to a minimum, and plenty of detail in the shadows of foliage; this being probably due to a greater proportion of yellow rays reflected from the shadows.

CAPTAIN ABNEY: There is a curious problem which may be interesting. If you have a plate backed with a stained collodion film what would be the color of the light passing through it and of that reflected from the back of the plate? My experiments convince me that it is a mixture of white and colored light. In preparing photographs for an Eclipse Expedition I put the emulsion on plates with a flashed surface, but the results did not at all come up to my expectations, as I got halation.

MR. LYONEL CLARK: We tried to make our backing of the same refractive index as the glass, to prevent halation.

CAPTAIN ABNEY: I think we should pass a vote of thanks to Mr. Pringle for opening this discussion.

The vote of thanks was carried by acclamation.

AMERICAN INSTITUTE, PHOTOGRAPHICAL SECTION.

A regular meeting of the Photographical Section was held in the lecture room of the Institute, 115 West 38th Street, New York City, on Tuesday evening, December 6th. Henry J. Newton, President, in the chair.

Mr. O. G. Mason, Secretary, acknowledged photographic publications received, and stated that Miss Catharine Barnes would give the story of her travels during the summer in Southern England, with illustrations, at the January meeting of the Section. Miss Barnes made about 1500 negatives during her trip abroad.

Mr. Harrison exhibited a bromide print, explaining how it was made, and also a neat frame for small pictures.

The Vice-President, C. Van Brunt, was called to the chair and Mr. Newton, before reading his article on The Lantern Slide and its Relations to Art, remarked that he had made his paper very brief; he had intended to tell how he produced the slides, but he found that would take too much time.

THE LANTERN SLIDE AND ITS RELATIONS TO ART,

By HENRY J. NEWTON.

The subject which I shall treat this evening will be, in the main, the Relations of Art to the Lantern Slide. That there may be no misunderstanding of what I may say, or misinterpretation of terms used, I will, in the first place, define as fully as seems to me needful, what I mean by the term artistic in relations to and bearings on the subject under consideration.

I shall try to avoid assuming a dogmatic position by asserting that my way is the only way; that all who may differ from me are ignorant and idiotic.

The fact is that the interpretation of the word art is very flexible and becomes quite apparent when we attempt to compare it with the interpretation of the word science. In the latter we must have certainty by demonstration. In art the element of certainty can hardly be said to exist except in the minds of the advocates or leaders of certain schools. Modern art, in civilized countries is, in the main, the product of educated and cultured sentiment, and sometimes, when at its best, compares unfavorably with the artistic work of so-called Pagan nations.

In metallurgy the Japanese surpass in artistic work that of any European nation or people, but in landscape drawing they are as conspicuous as a failure as they are a success with metals, pottery, porcelains and textile fabrics. This is due to their ignorance of a scientific principle in nature, which is the arbitrary law of linear perspective; and this is about the only point where science and art clasp hands.

It seems to me that in defining art, it should, as a rule, be done in general rather than in specific terms. There can be no specific rule for coloring a landscape, a rule which would dictate to every landscape artist precisely the same pigments or compounds of pigments to be used invariably in coloring specific parts of the same view would be impracticable.

The reason why this is impracticable is because

one of nature's immutable laws forbids it. Nature seems to possess the omnipotent capacity of producing infinite variety in the same species, and she exercises this power to the fullest extent in her production of the optic nerve in the human being with sensation and perception. No two artists see or depict with precisely the same colors the same view.

The methods of each are as distinct from the other as their handwriting, and is as difficult to counterfeit. The artist who succeeds in representing form and color as the cultured majority see it becomes the popular artist.

The senses which respond most readily to the allurements of art are seeing and hearing. Such artistic effects are usually distinguished as "fine arts," to separate them from the "mechanical and useful arts." The sense of seeing is the one involved mainly in the subject before us this evening. What charms the tympanum is the harmonious blending of atmospheric waves.

At the present time I am not trying to interest you through that avenue of sensation, and am making no effort to produce pleasurable artistic sensations by draping my thoughts in eloquent language and presenting them through an expert elocutionist, which would produce artistic effect, but shall address myself to the sense of seeing, which sense is the result of waves of a much more subtle agent than the atmospheric waves, and the sensation of color is largely the result of the blending of these etherial waves, and whether the effect on the nerves be one of pleasure or pain depends upon whether the blending be harmonious or inharmonious, the same as results to the sense of hearing when musical notes fall upon the ear, and whether the sensation be pleasurable or painful will depend upon the fact of whether the atmospheric waves unite harmoniously or discordantly.

I hold that anything which produces unpleasant or disagreeable sensations cannot be artistic, and further that which produces pleasurable sensations without producing weariness is the most artistic.

There may be artistic sensations produced by a loud clanging and banging of musical instruments, but the senses soon tire of it and seek relief. The popular and orthodox lantern slide has just the effect on my optic nerve which noisy music has on the nerves of my ear, and under an hour's strain my optics become tired and rebel. This should not be so. The fault is of long standing and originated in the early days of photography in consequence of certain notions entertained by professional photographers. Artists of that time treated photography with ridicule and contempt; a petty warfare was kept up between the artist and the professional photographer. The photographer who could make a photographic picture became inflated with exaggerated notions of his importance, and just in the degree of popular favor awarded to photography the artist's jealousy was increased and expressed.

The mistake which the early producers of lantern slides made was the ignoring and ruling out atmost phere from the slide—absolutely clear glass was the fatal dogma. This was purely a photographic notion and unartistic to the last degree. Aerial perspective is almost, if not quite, as potential and necessary in a landscape painting as linear perspective. The supreme effort of a landscape artist is to reproduce nature, and to do this he must paint atmosphere. No photographer can make a perfect negative of an out-of-door view without photographing atmosphere; the longer the distance photographed the more atmosphere. If a negative should have atmosphere represented in order to be perfect it follows that a lantern slide made from such a negative to represent it should represent *all* the atmosphere in the negative. If this be so it follows that a dry plate which will make a *good* negative will, with the same careful manipulation, make a good lantern slide. This seems quite a rational theory, although it is radically heterodox. Yet dogmatic notions, whether antique or modern, have to, in the long run, submit to modification and change when assailed by *demonstrated facts;* and the slides which I shall exhibit this evening will mainly be for the purpose of demonstrating the correctness of the theory just advanced. These slides have been made, as a rule, on the most sensitive plates in the market. Special plates usually used I shall only exhibit for the purpose of illustrating the point at issue.

I will not deny that there may be cases where a very thin negative without much contrast is used that a special plate would succeed better than a quick plate; but my way would be to strengthen the negative and use the quick plate. The modern lantern slide has become one of the most useful products of photography, and in its adoption to illustrate lectures almost a necessity.

There is scarcely a limit to its use in this field, and it frequently happens that the viewing of slides used on such occasion produce more pain than pleasure because of defects in their production.

The amateur photographer of the present is a devotee of the lantern slide; after becoming able to make a respectably good negative his effort is to

make with it a good slide, and I would not say a word to discourage him or her. Working at any photographic problem in my opinion is healthy mental exercise. It necessitates contact with scientific problems, which creates a thirst for more light, and inspires a longing and desire to become more familiar with nature and her methods. The negative and the positive are alluring lights that beckon the student on; torches that illumine the way; prophetic voices that promise reward for diligent labor and patient toil. They are nature's representatives and they bring you in close communion with some of her mysteries, and you are led to realize that just out of your reach nature conceals a golden key with which you could unlock some of her secret chambers if obtained; and she points to the past and shows that the ones who have obtained the magical keys have been the diligent ones, who by toil have earned the privilege of culling few jewels from her great storehouse. I believe there is nothing better for the ethical and intellectual growth than to become interested in scientific and artistic studies. I would not say a word which would tend to cool the ardor or enthusiasm of the investigator of nature, but would use my influence, as far as possible, to inspire and encourage.

The wonderful advance made in the present century causes the question to be frequently asked in reference to the future, whether we have not obtained about all of nature's most valuable secrets, and if there is any probability that the next century will, in any respect, be as wonderful as the one that is passing away. From my point of observation my answer would be that we have just commenced; we have not as yet learned the first letters in the alphabet which tells of the possibilities and powers of human reason, and have not even entered the vestibule of the great Temple of Knowledge.

There is everything to encourage those who are enamored with the investigation of the great problems that surround us on every hand. What we know when compared with the unknown, is like a few grains of sand compared with the sand on the shores of all the seas and oceans—so to the young or to the old I would say, *go on,* an infinite field is before you.

DISCUSSION.

Mr. Newton, at the conclusion of his paper, said he had a number of lantern slides to exhibit, that they were mainly made from scenes around his country home, at Nyack, on the Hudson, and perhaps they would show it was not necessary to go all over creation to find pictures. The thing we needed to learn was to know a picture when we saw it. Many excellent and beautiful pictures were then thrown upon the screen, Mr. Newton describing them in an easy, entertaining manner.

Mr. Van Brunt exhibited a few pictures developed with amidol—illustrating how to produce white and black.

MR. NEWTON: If there is any one present who wants to ask any questions, or make any remarks, we shall be very happy to hear what may be said.

MR. J. WELLS CHAMPNEY: I am very pleased to say that I consider your exhibitions here are very artistic. I have very little to say excepting "Amen" to your theories, and the results you have shown. I wish to capture for myself one of the slides.

MR. NEWTON: You can have as many as you want of them.

MR. CHAMPNEY: It is not only a question of the gratification we have in looking, but it leads to the optical truth of seeing; that is to say, it represents something that artists have seen and studied for, that photographers have not. I thank you for the privilege of expressing my gratification and pleasure on this occasion.

Mr. NEWTON: As Mr. Champney is one of our most distinguished artists, I appreciate the remarks coming from him, more than I would if he were not an artist. It is something that photography has never studied for; that is just it. This state of things comes from photography and not from art, as I represented it in my paper. I think all artists will agree with my position as being unassailable. I can demonstrate its truth.

A MEMBER: I suppose it was taken from dry-plate negatives?

MR. NEWTON: All dry plates; nothing wet about it. At some other time I will tell you how I produce lantern slides according to the heterodox notions.

MR. W. E. PARTRIDGE: There is an old saying, that comes down from theology, that orthodoxy is my doxy, and heterodoxy is your doxy. I am afraid the other fellows, who have been in the majority, have been talking too much orthodoxy about the ways of making slides and the plates they ought to be made on. I think if a good many of them could have been here to-night they would have become of our doxy—would not have been so heterodoxy. There is one more theological point I want to make. I think one of the best sermons I ever heard in my life was upon the Lord's Prayer. The preacher, after taking up the various petitions in it, and showing how they had been answered, came to the one, "Give us this day our daily bread," and stopped suddenly, and with much emotion, said: "Brethren, it seems to me for the rest of your lives you had better stop using that, and instead of saying, 'Give us this day our daily bread,' pray, 'teach us to know our daily bread when we see it.'" Now, that is what is the matter with amateur photographers, as well as the rest of the world, they don't know their daily bread when they see it; don't always know a good slide when they see it; don't know a good picture when they see it; don't know when they have got into the best position. They need to put up a petition to the artistic prayer answerer to teach them to know their daily bread. I say this in all honesty, that more than the average number of landscapes made by the amateur photographers are superior to the landscapes made by professionals. In going about the country and looking at professional work there is very little of the professional that comes up to what we would consider decent amateur landscape work.

MR. BEEKER: I used to be a daguerreotypist. I would say something in favor of the inventor of the lantern slides. You say the old photographers had no idea what was wanting in producing atmosphere. They tried to obtain it, but the process was too inferior in those days to get what they wanted. Langheim made a picture of Niagara Falls, the first one ever made, that is to get the water perfectly and the trees on Goat Island. He had some twenty-six or twenty-eight gold medals which he obtained in Europe from noble families there. That shows he had some taste. I consider it due to my old teacher and partner to say something in his favor, because he was the inventer of the slides. It is said that necessity is the mother of invention. So it was with this photographer in the making of lantern slides. Langheim went from here to Europe and took some of his daguerreotypes along with him. They caused such an effect there that several came from Europe here to learn the art.

A MEMBER: How did he make his first slide?

MR. NEWTON: By the old French process of Feryea, which was the albumen process.

A MEMBER: That was after the collodion process was introduced?

MR. NEWTON: I think it was before the collodion process was introduced. Levy succeeded Feryea. Feryea was the first that made those beautiful positives on glass, I have many of his slides.

President Newton was heartily applauded, and the unanimous verdict seemed to be that he had struck a blow in the direction of a long-needed reform, and the slides he exhibited fully justified and fortified his position.

Correspondence.

AN OPEN LETTER.

THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

CONVENTION AT CHICAGO, ILL.
2D REGIMENT ARMORY, WASHINGTON BOULEVARD
JULY 18, 19, 20 AND 21, 1893.

To Every Photographer:

Dear Sir: The next Convention of the Photographers Association of America will be held at Chicago, Ill., 2d Regiment Armory, Washington Boulevard, on July 18 to 21 inclusive, and all photographers and those interested in photography are earnestly requested to attend whether as exhibitors or not, and you will surely find it of great advantage.

The objects of the Association are:

The advancement of the art of photography.

The elevation of the professional character.

The interchange of ideas and methods for a higher and more perfect and profitable system of conducting the business.

The diffusion of scientific knowledge among its members by fostering photographic literature, stimulating discovery and inventions (by numerous and valuable awards and prizes), and the encouragement in all legitimate ways of the broadest and highest possible range of photographic production.

To inaugurate exhibitions of photographic work on a scale commensurate with the progress of art.

Also, the exhibitions of new inventions in photography, as well as the latest improvements in the same, offer a special opportunity to take advantage of the best methods for successfully meeting the public's demand for photographic work. Will not the support of an Association with such principles be of advantage to you?

There is always something new, and many photographers owe their success to ideas and methods (never dreamed of before) learned at the convention.

It was with the greatest difficulty that a suitable hall could be gotten during the World's Fair, but by beginning in time an exceptionally well-lighted hall was secured, but space for display is very limited, as a very large collection is expected. It would be well for exhibitors to limit the number of pictures, as awards are never given on the largest display.

Special rates from every point in the United States will be given during the World's Fair, consequently it is unnecessary for the Executive Committee to make further arrangements during the convention.

Chicago offers exceptional advantages for holding the convention. It is not necessary to inform the fraternity of the exceptional advantage of holding the convention during the World's Fair, as every one is going to the World's Fair, and at the same time attend the convention. Every arrangement is made to make this, the World's Fair Convention, the greatest ever held, as will be seen from the awards offered; that there has been a very liberal classification, so that every one has a chance to secure an award, and it is hoped and expected that there will be a ready response, so that long before the convention opens a knowledge of what is to come will enable the officers to be fully prepared for all entries. Many will be proud to carry home a prize from Chicago at the World's Fair Convention of Photographers' Association of America.

To Become a Member.—Any photographer or employee of good moral and professional standing may become a member by sending $5 if a proprietor, or $2 if an employee (which pays entrance fee and dues), to the Treasurer, G. M. Carlisle, No. 229 Indiana avenue, Washington, D. C. If already a member kindly remit your dues ($2), and by so doing avoid waiting your turn at the entrance when you arrive at the convention, as none can be admitted whose dues remain unpaid. Become a member and get the benefits of the art lectures, practical talks, the grand exhibition of photographic productions from all over the world, and extensive stock exhibits. So much space in the Stock Department having already and so rapidly been taken by the leading manufacturers and dealers in photographic supplies, indicates a grand convention.

July is an appropriate time to hold the meeting, so take a vacation, attend the convention, reap the multitude of advantages derived therefrom, and upon your return home you will find that you can use the new and beneficial ideas in your business with great profit professionally and financially.

Yours fraternally,

Adam Heimberger,
Sec'y P. A. of A.

NEW ALBANY, Ind.

ANOTHER OPEN LETTER.

The Chicago Academy of Sciences has undertaken the collection of views from all localities in Illinois and adjacent parts of Indiana, Michigan and Wisconsin, for the purpose of bringing together where they may be accessible to all scientific workers, a complete series illustrating the geological and natural history features of the region. The value of such a collection is apparent, and the Academy believes that in the interest of success it may reasonably expect the co-operation of all who may be in a position to assist in the work. We have therefore addressed this letter to you in the hope that you will contribute views, of which you doubtless have many, of various points of interest in your neighborhood. While all views are acceptable, those illustrating the following features are especially desired: Geology, topography, land, water and forest scenes, farm life, public buildings, neighborhood characteristics, and in general anything characteristic or unique in the study of nature or man.

In sending in views, please observe the following directions:

1. Send photographs unmounted.

2. Send with each a careful description of, *a*. The locality. *b*. Objects shown. *c*. Direction of view. *d*. By whom taken. Number descriptions and views to correspond.

3. Address these, and all communications to The Chicago Academy of Sciences, W. K. Higley, Secretary, Chicago, Ill.

The Academy will greatly appreciate your aid, and will gladly render due credit and acknowledgement for views contributed.

Very truly,

Gayton A. Douglass.

THE JOINT ANNUAL EXHIBITION.

To the Editor of THE PHOTOGRAPHIC TIMES:

DEAR SIR: Will you kindly announce to your readers that the Sixth Annual Exhibition of Photographs, under agreement between the Photographic Society of Philadelphia, the Society of Amateur Photographers of New York, and the Boston Camera Club, will be held by the Photographic Society of Philadelphia at the galleries of the Pennsylvania Academy of the Fine Arts, April 17th to 29th, 1893.

These exhibitions are open to all photographers of the world, and bring together the very best pictures of the day where they can be studied and compared.

The foremost foreign photographers will undoubtedly be largely represented, and it is therefore hoped that with this early notice our own countrymen will see to it that a display is made by American photographers which shall be up to the highest possible standard.

Circulars with rules and full particulars will soon be ready for distribution, copies of which may be obtained on application to the undersigned.

Very respectfully,

Robert S. Redfield,
Chairman Exhibition Committee.

1601 Callowhill Street, Philadelphia, Pa.

Record of Photographic Patents.

487,262. Registering Device for Photographic Cameras. John J. Geiger, Sr., Chicago, Ill.

487,295. Camera Tripod. Joseph Rhodes, San Diego, Cal.

487,520. Photographic Roll-holder. Thomas S. Gilette, Evanston, Ill.

487,833. Camera Shutter. John W. Grantland, Philadelphia, Pa.

487,937. Photographic Printing Apparatus and Process. Ulysses S. Rush, Tacoma, Wash.

488,042. Picture Exhibitor. Alfred Svenson, Rockford, Illinois.

488,134. Picture Exhibitor. David I. Rogers. Lebanon, Kentucky.

TRADE MARKS.

22,153. Photographic Developers. Actien Gesellschaft fuer Aniline Fabrication.

22,154. Photographic Developers. Actien Gesellschaft fuer Aniline Fabrication.

Queries and Answers.

396 A. B., Buffalo.—Will the combined toning and fixing bath for the B. P. aristo paper give as good results as the separate baths? I have had some trouble in getting clear whites, the paper seems to have a yellowish tint in using the combined bath. Should like to know if I could buy separate baths ready prepared if you think the trouble is in combined bath.

396 *Answer*—We call your attention to an article in PHOTOGRAPHIC TIMES of September 2, 1892, pages 446 and 447. Follow formula and advice given there and you will be astonished to see what excellent results you will obtain on the Bradfisch paper. Separate toning baths for aristo papers are not in stock.

397 ARISTO, Missouri.—Acetate soda 1½ ounces, salt 30 ounces, water ½ gallon, chloride gold 3 grains. Allow this to stand twenty-four hours before use. For toning take 8 ounces of the above stock solution to 1 gallon of water. Mix just before toning.

Dissolve 15 grains of gold in 3 ounces of water. To tone 400 cabinets take half an ounce of this solution. This quantity will tone 400 cabinets by toning 50 prints at a time. This bath does not bleach prints at all.

I have seen the above toning bath especially recommended for aristo—American. I have tried it twice and made a failure of it both times. After mixing bath I find it to be strongly acid when it should be neutral. What should I use as a neutralizer? 2. Where can I get detailed instructions for making "doubles" or freak photos.? Is there any book published on this subject.

397 *Answer.*—(1) Neutralize with acetate of soda. There is not enough of it prescribed if you take the crystalized salt. It should be the double fused. Anyway add acetate till the gold is neutral.

(2) H. Schnauss' "Photographisher Zeivortreib" (photographic pleasures) has been translated into English and published by Piper & Carter, 5 Furnival Street, London, E., England.

THE PHOTOGRAPHIC TIMES.

AN ILLUSTRATED WEEKLY JOURNAL DEVOTED TO THE ART, SCIENCE AND ADVANCEMENT OF PHOTOGRAPHY.

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W. I. LINCOLN ADAMS, Editor.

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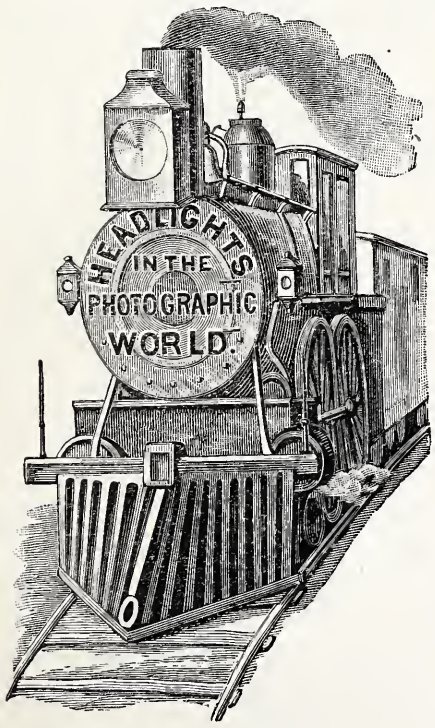
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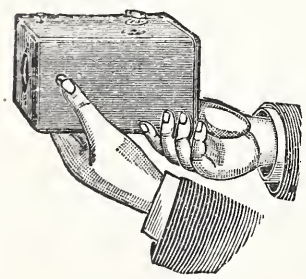
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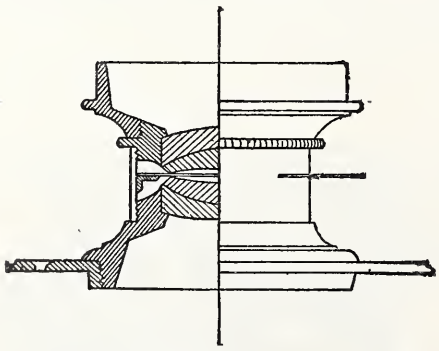
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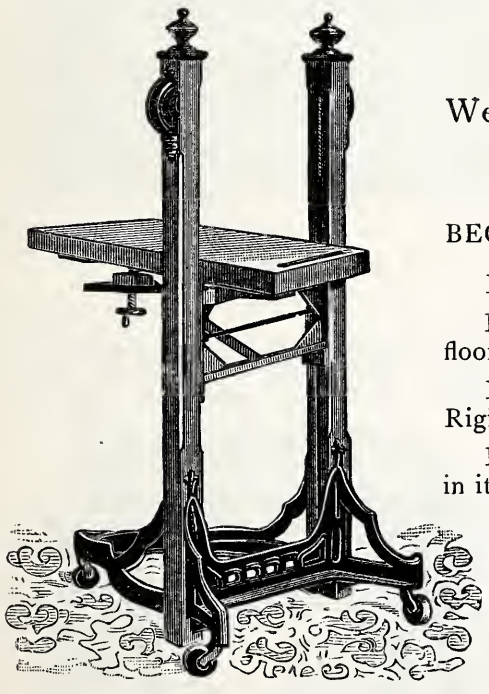
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It will enable you to get your Camera within 13 inches of the floor, or as high as you wish from the floor.

It is fitted with turning casters, with rubber wheels. Strong, Rigid, Easy in Operation, and Ornamental in Appearance.

It is the invention of a practical photographer and is perfected in its details. WARRANTED PERFECT.

FOR SALE BY ALL DEALERS.

PRICE, Boxed, $25.00.

NEW ORTHO-PANACTINIC LENS.
H. R. & CO.'S ALBUMEN PAPER.

HORGAN, ROBEY & CO., Sole Agents,
34 Bromfield Street, BOSTON, MASS.

INGLIS & CO.'S

ENLARGEMENTS IN

Black, Sepia and Water Colors,

HAVE A DISTINCTIVE CHARACTER OF THEIR OWN.

Salient points of our Water Colors are faithful retention of likeness, delicacy of coloring and brilliancy of tone.

2637 STATE STREET, Chicago.

SEND FOR PRICE-LIST.

ESTABLISHED 1865.

JNO. G. HOOD, CHAIRMAN. WM. D. H. WILSON, TREASURER. JOS. P. CHEYNEY, SECRETARY

WILSON-HOOD-CHEYNEY COMP'Y,

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Photographic Supplies,

AND THE

ROSS LENS.

Full Assortment of White's Posing and Lighting Specialties.

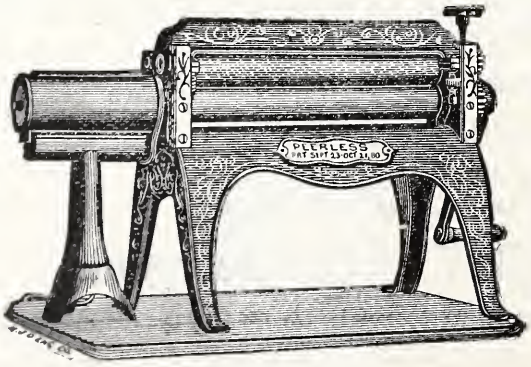
No. 910 Arch Street,
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A. M. Collins
Manufacturing Company

would call attention to Dealers in Photographic Supplies to their superior facilities for the manufacture and distribution of Photographic Cards, claiming that they have always in stock, or are prepared to make promptly to order, a greater variety and much larger quantity of Cards of superior quality than any other establishment in this or, perhaps, any other country.

Warehouse, No. 527 Arch Street,
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NEW "PEERLESS" BURNISHER.



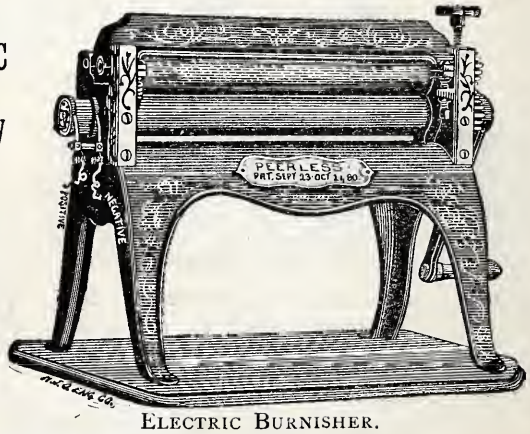
Oleum Burnisher.

OLEUM and ELECTRIC

Rotary and Stationary

HEATED BY
OIL, GAS, or ELECTRICITY.

25 POINTS OF SUPERIORITY.



Electric Burnisher.

QUICKEST AND MOST UNIFORM HEAT OBTAINED.

These machines are the latest inventions of our Mr. W. H. Boles, the inventor of the well-known Acme Burnisher.

For Aristo Paper our machines cannot be equalled.

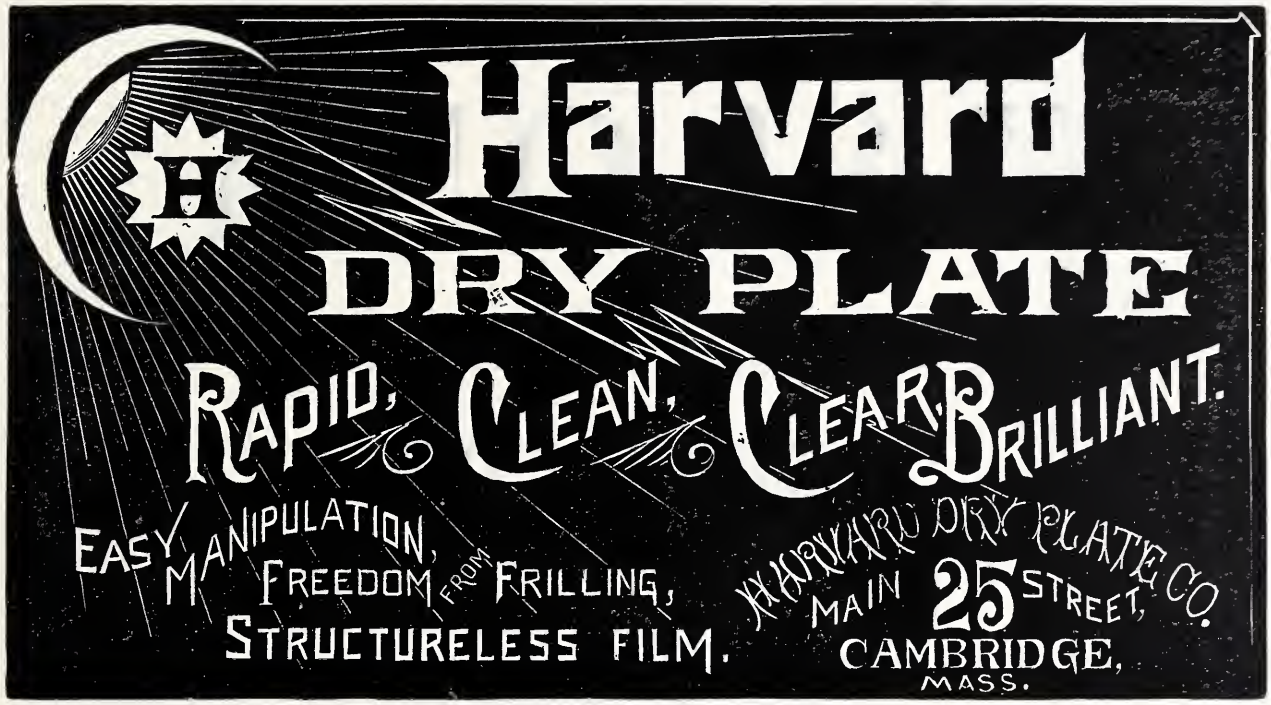
Don't buy until you have examined the **merits** of the **Peerless.**

ASK YOUR DEALER FOR IT.

Send for Illustrated and Descriptive Circular and Price List.

THE PEERLESS BURNISHER CO.,
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IT IS "THE BEST!"



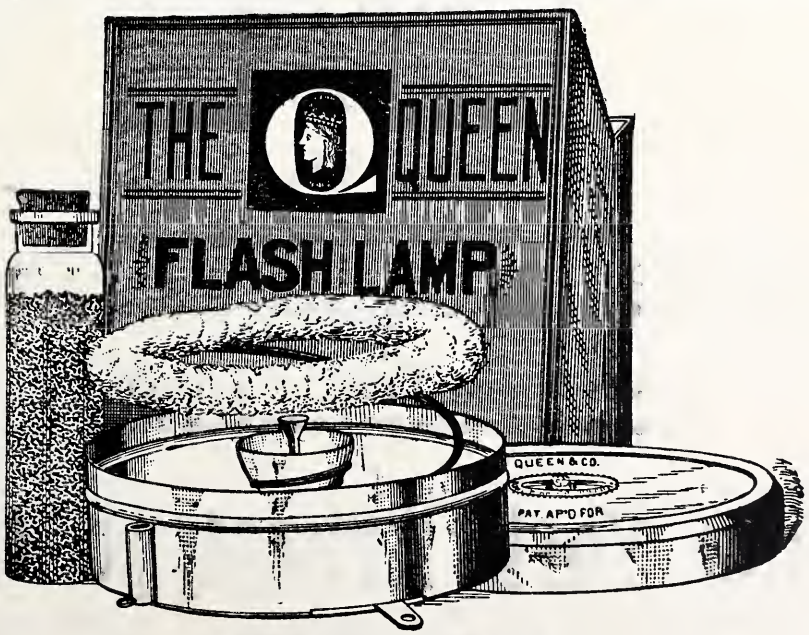
A full supply kept in stock by

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QUEEN'S FLASH LAMPS

THE ONLY ENTIRELY SATISFACTORY FLASH LIGHT APPARATUS IN EXISTENCE.

Mailed to any address upon receipt of $1.50.



$1.50

STATISTICS:

Depth 1¼ inches
Diameter 4 "
Weight 4 ounces.

Charge (small) 20 Gr., (costs about 1½ cents.)
" (large) 30 Gr., " 2 "

Size of room effectively lit when good lenses are used, about 25 x 30 ft.
Size of room effectively lit when cheap lenses are used. about 16 x 20 ft.

Time consumed in getting the lamp ready for discharge, 1½ minutes.

Jas. W. Queen & Co., Phila

Now Ready for Delivery.

KALONA

A Collodio-Chloride Paper.

PERFECTED

After a long series of

Exhaustive Experiments.

UNAPPROACHABLE

In QUALITY,
RESULTS,
FINISH.

A Scientific Solution of the Photographic Paper Problem.

Everything Tried. Proven.

New York Aristotype Co.

MANUFACTURERS,

Bloomfield, : : : : : New Jersey.

THE TRADE BULLS-EYE MARK CAMERA

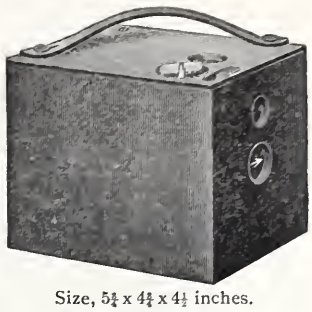
A Perfectly made, film-roll camera, making 3½ in. round or square pictures, for $7 [ebonite] or $8 [leather].

No Dark-room required to load or unload. Uses "LIGHT-PROOF FILM CARTRIDGES" which can be inserted and removed anywhere. Each cartridge makes 12 exposures.

Beautiful Results. Simplicity of operation and GOOD FILM insure satisfactory results to the inexperienced, while the fine quality of the negatives astonishes old photographers.

Everybody should have one. No matter if you have a dozen other cameras The Bulls-Eye is the latest wonder and just the thing for *Lantern Slides*, or to slip in your grip-sack when travelling.

BOSTON CAMERA M'F'G CO.,
380 Tremont St., BOSTON, MASS.
FOR SALE BY THE TRADE.



Size, 5¼ x 4¼ x 4½ inches.



"LIGHT-PROOF" FILM CARTRIDGE.

A GREAT CONVENIENCE IN DEVELOPING DRY PLATES.



Pelletone

PYROGALLIC

ACID TABLETS,

Put up in bottles, each containing 100 2-grain (*exactly* 2 grains) tablets of

SCHERING'S

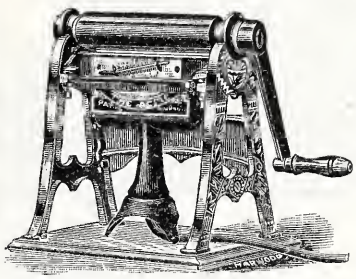
Unrivaled Pyrogallic Acid

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Price per Bottle, reduced to 40 Cents.

FOR SALE BY ALL DEALERS, AND

THE SCOVILL & ADAMS CO.



PATENT APPLIED FOR.

Acme Amateur Rotary Burnisher.

NOTE.

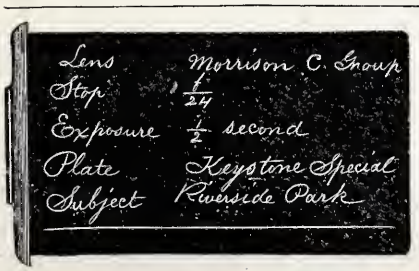
Quickest Heater in the world.
Saves seventy-five per cent. of gas, oil or alcohol.
No sweat, no smoke, no smell.
Acme Horizontal Thermometer attached.
No blistered prints, uniform results.
Will burnish an 8 x 10 and all sizes under.
Simplest Rotary Burnisher ever made.
One-hand wheel adjustment.
Full Nickel Finish.
Guaranteed in every particular.

PRICE, OIL, GAS, OR ALCOHOL, $15.00.

FOR SALE BY ALL DEALERS.

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ACME BURNISHER CO.,
FULTON, N. Y.





REGISTERING SLIDES.

(PATENTED.)

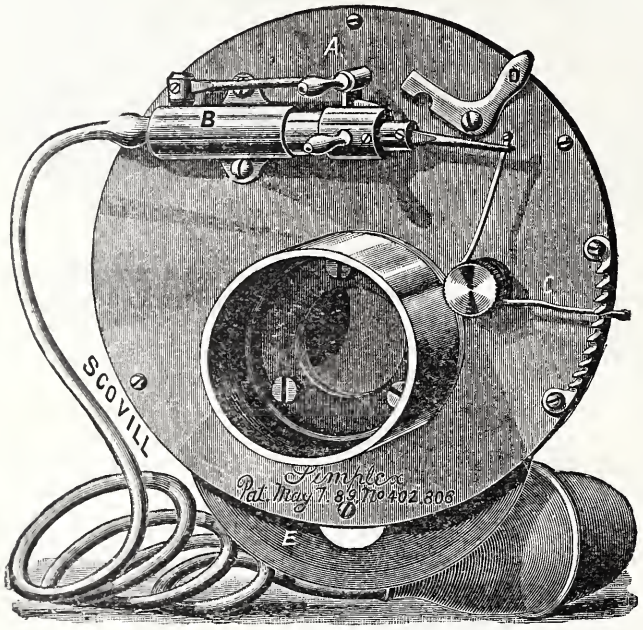
In the pleasure or excitement attendant upon picture-taking, holders slides have been so changed about that the note-book afforded no clue to their identity. All photographers, whether professional or amateur, who have in time past puzzled their brains in the endeavor to solve such vexatious questions as these—

"Have I or have I not exposed that plate?"
"If exposed, was the plate used for that prized picture?"
"Shall I incur the risk of making a double exposure?"

henceforth will have themselves only to find fault with if they do not procure and use in their dry-plate holders the patent registering slides, or as they have been called "Record Slides." These can be written upon with slate or lead pencil *ad libitum*, and the writing erased without injury to them.

Registering Slides *will be supplied with new American Optical Co.'s Dry Plate Cameras and Amateur Outfits up to* 10x12 *size without addition to price list.*

THE SIMPLEX SHUTTER.



This excellent and new shutter will at once commend itself to all users of the Camera.

It is operated as follows:

TO SET THE SHUTTER FOR QUICK WORK:

Raise knob A, press back knob B, which is attached to the piston. Drop knob A so as to catch and hold this piston. Press down arm D towards the right, until its other end is free from the piston B. Regulate the speed for shutter by placing spring C into any notch which will give the speed required; when ready, press the bulb, and the exposure is made.

FOR TIME EXPOSURES:

Raise knob A, press back knob B as far as it will go, drop knob A in order to hold the piston. To the left, push lever arm D as far as it will go, there release spring C from the notches. When ready for an exposure, press the bulb and hold it pressed as long as the exposure is required, then release it, when the shutter will close.

The shutter is provided with rotary stops (E) whose diameters are 1 in., $\frac{5}{8}$ in. and $\frac{3}{8}$ in.

PRICE, $13.50, NET CASH.

THE SCOVILL & ADAMS CO.,

423 BROOME STREET, NEW YORK CITY.

Remember

THAT

"Three Crown"

Albumen Paper

Is absolutely the BEST.

WHY?

Because none but the Best of the Rives Paper is selected for Albumenizing the THREE CROWN BRAND.

It is therefore free from the imperfections often to be found in other brands, which arise from imperfections in the plain paper and cannot thus be avoided.



HIGGINS' PHOTO MOUNTER

AN ENTIRELY NOVEL AND SUPERIOR ADHESIVE, SPECIALLY PREPARED FOR MOUNTING PHOTOGRAPHS, ARISTOTYPES, SCRAP PICTURES, ENGRAVIRGS, &c.

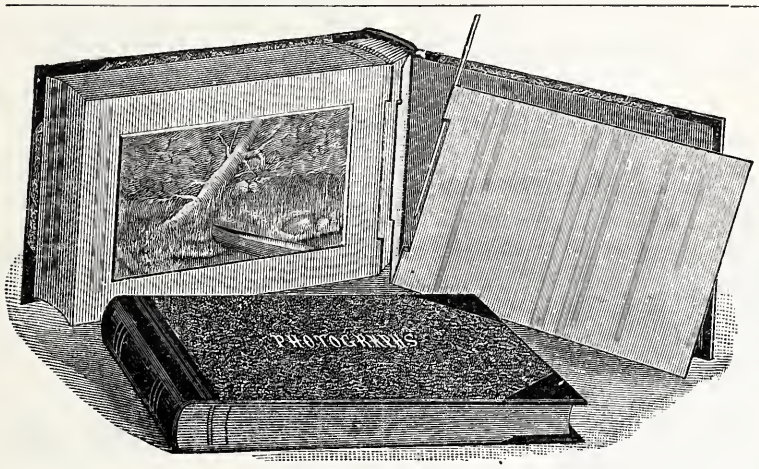
NOT A FLOUR OR STARCH PASTE, BUT A VEGETABLE GLUE,

being a new patented discovery in the chemistry of adhesives. It is proof to decay, and the water will never separate, leaving the body stiff and hard, as occurs in all PASTES. Will last indefinitely without deterioration. Will not strike through, change the tone, nor injure any mount. Beautiful white color. Fully guaranteed.

FOR SALE BY THE TRADE GENERALLY.

Prices in Screw-capped Jars: 3 oz., 15 cts.; 6 oz., 25 cts.; 14 oz., 50 cts.

CHAS. M. HIGGINS & CO., SOLE MFRS.,
168-172 EIGHTH STREET, BROOKLYN N. Y.



IMPROVED SPRING BACK

ECLIPSE ALBUM.

PRICE LIST.

IMPROVED SPRING BACK WITH TWENTY-FOUR COLLINS CARDS. WHITE AND GRAY.

No. 1	6 x 7	cards	$2 25
No. 2	7 x 10	"	2 50
No. 2½	10 x 7¼	" upright	3 50
No. 3	10 x 12	"	3 75
No. 3½	12 x 10	" upright	4 25
No. 4	11 x 14	"	4 25
No. 5	14 x 17	"	7 00

Nos. 1, 2, 2½, 3, 3½ and 4 are handsomely finished in Morocco, half leather bound, with gilt title, and enclosed in a neat box. No. 5 is extra gold finish.

For sale by

THE SCOVILL & ADAMS COMPANY,
423 Broome Street, New York.

CLEMONS' NEW MATT-SURFACE PAPER.

SOMETHING NEW UNDER THE SUN—A REVOLUTION IN THE ART OF MANUFACTURING.

After many years of scientific research a preparation for the salting of plain photographic paper has been discovered, by which method the finest printing results are obtainable. The advantages are apparent to all.

I.—Constant use will not discolor the silver bath.
II.—Will produce the finest detail in printing.
III.—Any desired tone may be obtained from sepia to jet-black with less gold than ever before.
IV.—The "*New Matt-Surface*" paper when sensitized will keep fresh for a long time if properly stored.
V.—The price has not been advanced.

For sale by

THE SCOVILL & ADAMS COMPANY,
423 Broome St., New York.

Sample Sheets, by mail, 10 cents each.

CHEMISCHE FABRIK AUF ACTIEN

(VORM. E. SCHERING) BERLIN.

E. SCHERING, BERLIN. TRADE-MARK. REGISTERED.

PYROGALLIC ACID

RESUBLIMED

From E. SCHERING,

MANUFACTURING CHEMIST, BERLIN.

E. SCHERING, BERLIN. TRADE-MARK. REGISTERED.

SEE THAT YOU GET THE "GENUINE SCHERING'S."

THE SCOVILL & ADAMS CO.,
423 BROOME STREET NEW YORK.

AMATEURS, ATTENTION!



Please remember that in speed and every desirable optical quality no lenses yet constructed can rival

Voigtländer's Euryscope Lenses,

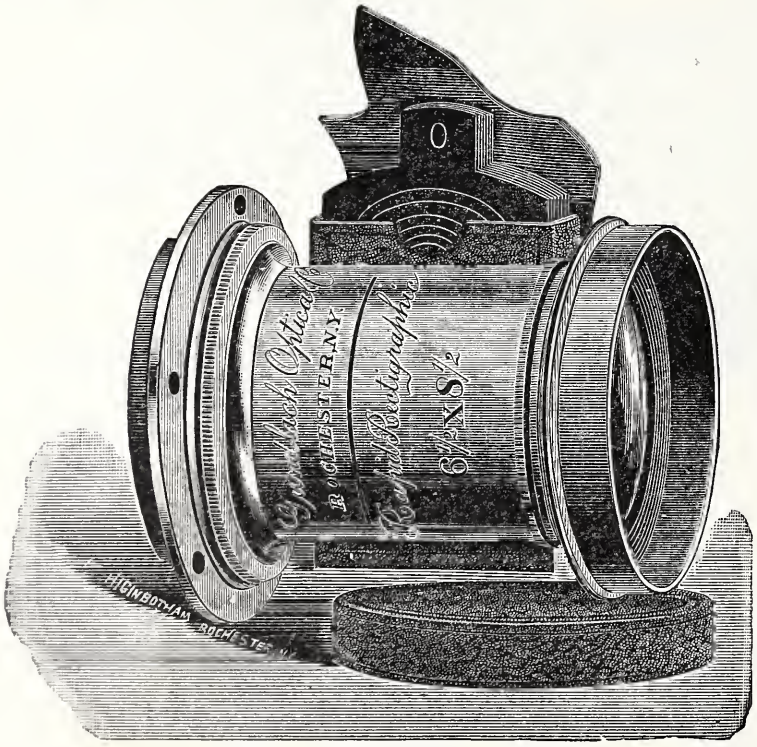
which are made in SEVEN different styles.

BENJ. FRENCH & CO.,

319 Washington St. BOSTON, MASS.

Revised price-List sent on application.

Correspondence solicited.



GUNDLACH OPTICAL CO.,
Rochester, N. Y.,

MANUFACTURERS OF

PHOTOGRAPHIC LENSES,
MICROSCOPES,
TELESCOPES, Etc.

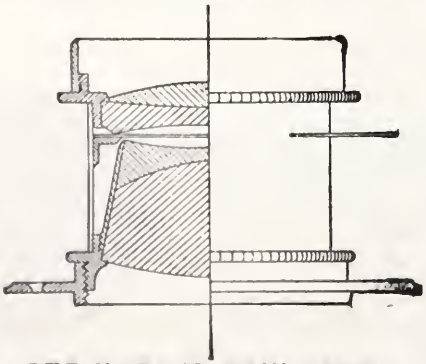
We make LENSES for every requirement of PHOTOGRAPHY.

They are unrivalled in their excellence, and are used by many of the most celebrated PHOTOGRAPHERS throughout the world.

Send for catalogue to your Stock Dealer or to the

GUNDLACH OPTICAL CO., Rochester, N. Y.

THE UNRIVALED STEINHEIL LENSES.



STEINHEIL'S NEW LENS.

These Lenses not only maintain their old-established reputation, but continue to lead in the field of progress. Made in six different series for every description of work. Special attention is called to

Series No. II, Patent Antiplanatic, the newest conception in rapid lenses. For Instantaneous Portraits, Large Heads, Full Figure Groups, Architecture, and Landscape. A marvel of illumination, depth and rapidity. No Photographer or Amateur should purchase a lens before testing a Steinheil, Series No. II. See accompanying cut.

Series No. III, the famous Aplanatic tube, the illumination of which has been increased, and which is recommended for large Portraits, full-size Figures, Groups, Architecture, and Landscape.

Series No. VI, Wide Angle Aplanat, which has no rival for copying Maps, Charts, Paintings and Engravings. It is the Photo-lithographer's favorite.

Send for Illustrated Catalogue and Price-List to

THE SCOVILL & ADAMS COMPANY.



IT GIVES US PLEASURE to announce to our friends and the trade, **our Removal** from our old quarters to the handsome five-story and basement, stone front, **No. 247 Jefferson Avenue.**

We have increased our stock of **Photographic Materials, Picture Frames** and **Mouldings,** and added a stock of **Pictures,** and are prepared to give all orders prompt and careful attention.

We still have the exclusive agency for the famous **Suter Lenses,** which have had, and are still having, a phenomenal sale.

Respectfully,

ALLEN BROS.

THE SCOVILL MAGNESIUM COMPOUND

IS ENTIRELY FREE FROM POISONOUS INGREDIENTS.

THE GENUINE ARE IN SILVER WRAPPERS.

In order to demonstrate this, quantities have been eaten at various times. We have often pounded it in a mortar to show that it does not explode.

Price of Scovill Magnesium Compound.

In ounce bottles, with fuses.	$0 50
In quarter pound cans, with fuses	1 40
In half " " " "	2 65
In one " " " "	5 00

Price of Scovill Magnesium Cartridges.

	Per Doz.	Per Gro.
No. 1, put up in packages containing 6 cartridges.	$0 50	$6 00
No. 2, " " ..	80	9 00
No. 2½, " " ..	1 20	13 00
No. 3, " " ..	1 50	17 00

Look out for imitations of

WATERBURY CARDBOARD.



Look out for the genuine, too, and see that you get it.

It is the Best and Cheapest.

THE NEW M. & V. LENS.

MANUFACTURED BY

MANHATTAN OPTICAL CO.,

(ROSS BUILDING)

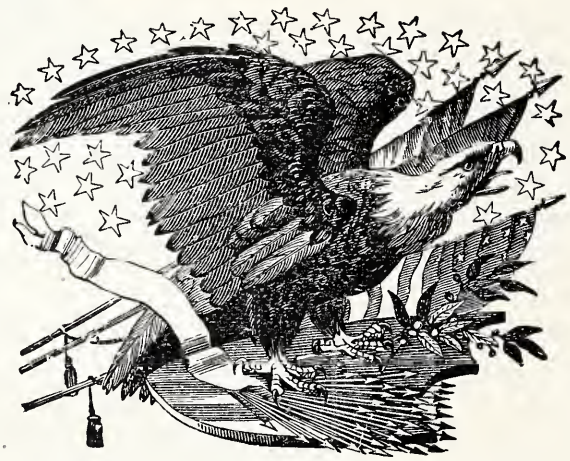
Bank and Greenwich Sts., NEW YORK.

This Lens is guaranteed equal in quality and finish to any of imported manufacture, and will be sent on trial to responsible parties.

CATALOGUE SENT ON APPLICATION.

Wuestner's New Orthochromatic Plates

Are the first in rank and proclaimed by the highest authority and our best amateurs as a plate the EQUAL of which has as yet NOT been before our Profession.



The results obtained by some of our professional and amateur friends are simply wonderful.

WUESTNER'S REGULARS are unsurpassed.

The First Prizes at our latest Conventions—Boston, Washington and Buffalo—were carried off by photographers using our plates.

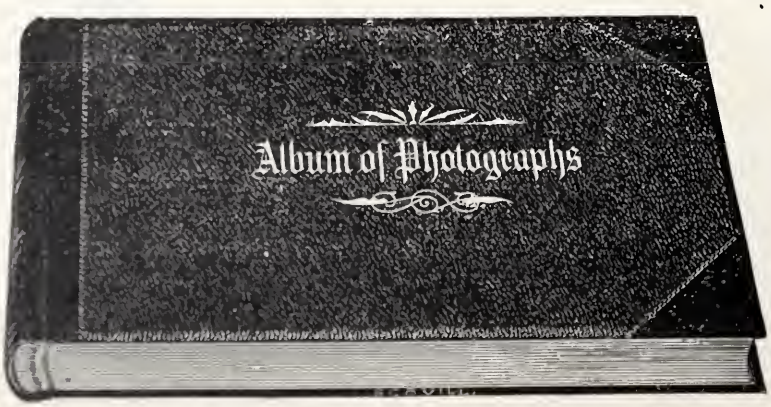
Ever since the Plates have been on the market they have held their reputation as being the leaders.

THE NEW IMPERIAL NON-HALATION PLATES NOW READY.

FOR SALE BY ALL DEALERS.

Wuestner's New Eagle Dry Plate Works,

22, 24 and 26 Jackson Place, Jersey City, N. J.



SCOVILL'S

ALBUMS FOR PHOTOGRAPHS.

Size of Cards..... For Photographs (size)	6x7 4x5	7x10 5x 8	10x12 6¼x8½	11x12 8x10	14x17 11x14
Plain.....	$1.25	$1.50	$2.25	$2.50	$5.00
With Gilt Lines..	1.25				

Each album has 48 pages, 24 leaves. In them the finest card-board only is used, chemically free from anything that could injure a print.

An Indication of Superiority.

The great superiority of **BLAIR'S FILM** is conceded by all who have tried it, and we presume it is due to this that other manufacturers have enlarged the size of their spools so that the hollow tubes on which Blair's Films are wound will not fit over them.

As a corresponding change in our tubes would doubtless result in another change in the spools referred to, we will only say that we do not believe the public can be forced to use any goods against its will, and suggest that the seeming difficulty may be overcome by securing an old empty spool which can be obtained from any dealer, or turning down a new one.

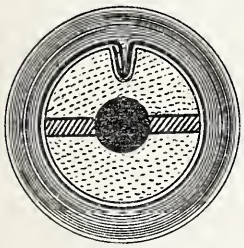
BLAIR'S FILMS are actually CLEAN, QUICK and RELIABLE, have no joints or seams, will never frill, and give uniformly good results. *CAN THIS BE SAID OF OTHERS?*

THE BLAIR CAMERA CO., Manufacturers,

BOSTON, NEW YORK. PHILADELPHIA. CHICAGO.

E. & H. T. ANTHONY & CO., Trade Agents,

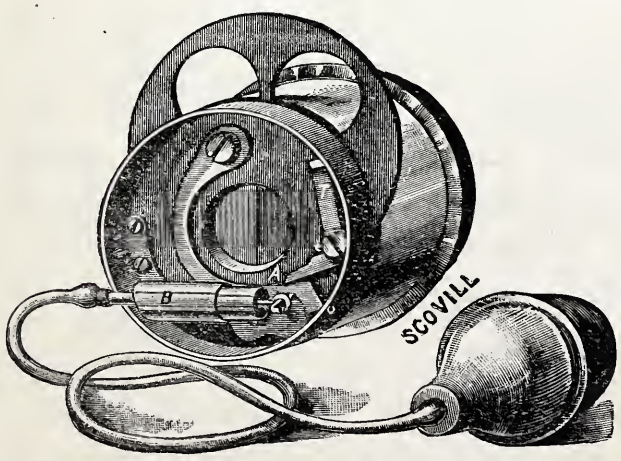
NEW YORK CITY



Our tubes are all $\frac{3}{4}$ inch inside diameter, and designed to slip over wood spools as shown in illustration.

The Elite Shutter.

For Timed or Instantaneous Exposures.



This economical shutter was especially designed for use with Waterbury Lens.

DIRECTIONS FOR USE:

To set the shutter for snap work, push the point A as close to the piston B as it will go. Push arm T as close to the edge of the lens as possible. The shutter is now set for quick work. When ready to expose, give a hard, quick squeeze on the bulb.

FOR TIME EXPOSURE:

Press arm T as close to centre of lens as it will go. Push the point A close to the piston B. For exposure, squeeze and hold the bulb, which will open the shutter; when the time of exposure is up, release the pressure upon the bulb and the shutter will close.

PRICE, $3.50.

Fitting to Lens, = = 50 Cents.

THE SCOVILL & ADAMS CO.,

423 BROOME STREET, NEW YORK CITY.

What is the Latest in Photography?

HAVE YOU SEEN IT?

IF NOT, IT IS



A MAT-SURFACE PAPER, having no gelatine used whatever. Prints in the sun until the deep shadows appear; then is developed, washed and fixed. The prints have much the same appearance of platinum, and the tone can be regulated from a brown to black.

Full instructions come with each package, and from the ease in which it is worked, prints can be made by the amateur or professional alike without previous instruction.

Paper does not deteriorate with age. Solution put up in 10-ounce and 16-ounce bottles for immediate use, at 30 and 50 cents per bottle.

Parties trying "Vici" will be favorably surprised, as it is something entirely new, and should not be likened to the mat papers at present on the market.

THE C. E. HOPKINS CO,

Manufacturers of Photographic Sensitized Papers,

16-24 Division Street, Brooklyn.

CONSUMERS OF



In ordering our paper from Dealers and Photographic Stock Houses, are advised to order by the name of **OMEGA,** not Aristo or Aristotype, as other brands are then frequently substituted.

There are other papers now manufactured which are claimed by interested parties to be the same or like our paper.

This may apply to Gelatine Papers in general, but we claim for our product characteristics which no other paper possesses, and we advise all to specify **OMEGA** and accept no substitution.

NOTE. { **Our reduction in Prices.**
{ **Our Paper now gives white high lights and will not yellow in Toning.**

THE LATEST IN CAMERAS.

The Pocket-Book Camera.

SOMETHING NOVEL AND VERY ATTRACTIVE.

Just the Thing for the Holidays!

This is NOT A TOY, but a REAL CAMERA, with a good Lens, capable of making pictures 1⅞ inches square.

The POCKET-BOOK itself is a well-made Russia leather one, lady's size, which can be used as an ordinary purse.

The Pocket-Book Camera complete, with half dozen Dry Plates, $3.00.

Ask your dealer for one, or send direct to

The Scovill & Adams Company,

423 BROOME STREET, NEW YORK CITY.

We Have It!

The New Developer

AMIDOL

Both in Solution, ready for use, and in the Pure Crystalline Form.

Dr. M. Andresen's original (Patented June 21, 1892, No. 477,486.) Amidol.

WE ARE TRADE AGENTS FOR DR. M. ANDRESEN'S AMIDOL IN THE UNITED STATES.

Price in one ounce cans,	$0 75
" " ¼ lb. cans,	2 75
" " ½ "	5 25
" " 1 "	10 00

The S. P. C. Amidol (Andresen's) developing solution, with full directions, ready for use, in eight (8) ounce bottles, 50 cents.

THE SCOVILL & ADAMS CO.,

423 BROOME STREET, NEW YORK CITY.

Trade Agents for Dr. Andresen's Amidol in America.

HAVE YOU USED SOLIO?

Eastman's

New Printing-Out Paper.

A PRACTICAL SUBSTITUTE FOR ALBUMEN PAPER.

CLEAR WHITES.
EXQUISITE TONES.
HIGH GLOSS.

Solio will not curl, crack or blister; requires no special handling, and can be **used** with **ordinary negatives.** It does not fix out and requires **no washing** before toning and fixing. **Free from the Defects** of Collodion or Gelatine Papers. Solio does not stain negatives.

Send 10 cents for sample package and print, cabinet size.

EASTMAN KODAK CO.,
ROCHESTER, N. Y.